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Letter dated 28 March 2002 from the Permanent Representative of Jordan to the United Nations addressed to the Under-Secretary-General for Economic and Social Affairs of the United Nations Secretariat

In my capacity as Chairman of the Arab Group for the month of March 2002, I have the honour to enclose herewith the World Summit on Sustainable Development progress assessment report for the Arab region (see annex).

I would appreciate it if the present letter and its annex were circulated as a document of the Summit.

(*Signed*) Zeid Ra'ad Zeid **Al-Hussein**

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Annex to the letter dated 28 March 2002 from the Permanent Representative of Jordan to the United Nations addressed to the Under-Secretary-General for Economic and Social Affairs of the United Nations Secretariat

UNEP ESCWA CAMRE

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT PROGRESS ASSESSMENT REPORT

FOR THE ARAB REGION*

December 2001

* The Arab Region is used to refer to the members of the League of Arab States (LAS), which covers North Africa and West Asia. Members of the Arab Region include Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Syria, Sudan, Tunisia, United Arab Emirates and Yemen.

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ACRONYMS AND ABBREVIATIONS

ACSAD	Arab Center for the Studies of Arid Zones and Dry Lands
AFESD	Arab Fund for Economic and Social Development
AFTA	Arab Free Trade Area
AGU	Arabian Gulf University
AIDMO	Arab Industrial Development and Mining Organization
ALECSO	Arab League Education, Culture, and Science Organization
ALO	Arab Labor Organization
AOAD	Arab Organization for Agricultural Development
AREIN	Arab Region Environmental Information Network
ARWR	Actual Renewable Water Resources
BIT	Bilateral Investment Treaty
CAMRE	Council of Arab Ministers Responsible for the Environment
CBD	Convention on Biological Diversity
CBO	Community-Based Organizations
CEDARE	Center for Environment and Development in the Arab Region and Europe
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CFCs	Chlorofluorocarbons
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
CSD	Commission on Sustainable Development
DPT	Diphtheria, Pertussis and Tetanus Vaccine
EEAA	Egyptian Environmental Affairs Agency
ECOSOC	UN Economic and Social Council
EIA	Environmental Impact Assessment
EPD	Environment, Population and Development
ECA	Economic Commission for Africa
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FDI	Foreign Direct Investment
GA	General Assembly
GCC	Gulf Cooperation Council
GCEP	General Corporation for Environmental Protection, Jordan
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEO	Global Environment Outlook
GHG	Greenhouse Gases
GIS	Geographical Information Systems
GMO	Genetically Modified Organism
GPA	Global Plan of Action for the Protection of the Marine Environment from Land-based Activities
HC	Hydrocarbons
HDI	Human Development Index
HIPC	Highly Indebted Poor Countries
ICAM	Integrated Coastal Area Management
ICARDA	International Center for Agricultural Research in Dry Areas
ICT	Information And Communication Technology
IDB	Islamic Development Bank
IT	Information Technology
ITSAM	Integrated Transport System in the Arab Mashreq
IUCN	International Union for the Conservation of Nature
JCEDAR	Joint Committee on Environment and Development in the Arab Region
KFD	Kuwait Fund for Development

Kgoe	**Kilograms Of Oil Equivalent**
LAS	**League of Arab States**
MAB	**Man and Biosphere**
MAP	**Mediterranean Action Plan**
MEAs	**Multilateral Environmental Agreements**
MCT	**Multipurpose Community Telecenters**
MENA	**Middle East and North Africa**
MEPA	**Meteorological and Environmental Protection Administration, Saudi Arabia**
MFMP	**Multilateral Fund of the Montreal Protocol**
MOU	**Memorandum of Understanding**
MP	**Montreal Protocol**
NEAP	**National Environmental Action Plan**
NES	**National Environmental Strategy**
NG	**Natural Gas**
NGO	**Non-Governmental Organizations**
NSDC	**National Sustainable Development Commissions**
NSDS	**National Sustainable Development Strategies**
NTIS	**National Transportation Information System**
ODS	**Ozone Depleting Substances**
OPEC	**Organization of the Petroleum Exporting Countries**
PERSGA	**Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden**
RAPSD	**Regional Action Programme for Sustainable Development**
ROPME	**Regional Organization for the Protection of the Marine Environment**
QIZ	**Qualifying Industrial Zone**
SD	**Sustainable Development**
SMEs	**Small and Medium-Sized Enterprises**
SOE	**State-Owned Enterprise**
SoEs	**State of Environment Reports**
SRAP	**Sub-Regional Action Programme**
TACC	**Technology Access Community Center**
TFR	**Total Fertility Rate**
TRIPS	**Trade-Related Aspects of Intellectual Property Rights**
UAE	**United Arab Emirates**
UN	**United Nations**
UNCCD	**United Nations Convention to Combat Desertification**
UNCED	**United Nations Conference on Environment and Development**
UNCLOS	**United Nations Convention on the Law of the Sea**
UNDP	**United Nations Development Programme**
UNEP	**United Nations Environment Programme**
UNFCC	**United Nations Framework Convention on Climate Change**
UNFPA	**United Nations Population Fund**
UNIFEM	**United Nations Development Fund for Women**
UNSO	**United Nations Office to Combat Desertification and Drought**
US	**United States of America**
US$	**United States Dollar**
WSSD	**World Summit on Sustainable Development**
WTO	**World Trade Organization**
ZPG	**Zero Population Growth**

I. INTRODUCTION

The United Nations (UN) General Assembly (GA) in its resolution 55/199 decided on the organization of a ten-year review of the progress achieved in the implementation of the outcomes of the United Nations Conference on Environment & Development (UNCED) at a summit meeting called World Summit on Sustainable Development (WSSD). The summit is to be convened in Johannesburg, South Africa from 26 August to 4 September 2002. The main objectives of the WSSD is to reinvigorate, at the highest political level, the global commitment to Sustainable Development (SD) by identifying accomplishments and areas where efforts are needed to implement Agenda 21 and other outcomes of UNCED, addressing new challenges and opportunities. This should result in a renewed political commitment and support for SD, consistent, inter-alia, with the principle of common but differentiated responsibilities.[1]

Arab regional action in support of sustainable development began with the *Arab Declaration on Environment and Development*, which was adopted by the First Arab Ministerial Conference on Environment and Development in 1986. Prior to the United Nations Conference on Environment and Development (UNCED), Arab governments issued a subsequent statement, the *Arab Declaration on Environment and Development and Future Prospects* (October 1991) to reaffirm regional commitment. This declaration was operationalized following UNCED with the *Regional Action Programme for Sustainable Development*, which was adopted by the Council of Arab Ministers Responsible for the Environment (CAMRE), under the auspices of the League of Arab States, in October 1992. The action plan detailed Arab programmes in support of sustainable development and identified three priority areas for immediate action: combating desertification, combating industrial pollution and increasing environmental education, awareness and information. These three issues have been the focus of regional activities in support of sustainable development for the past decade.

In the advent of the World Summit for Sustainable Development, a joint secretariat comprised of the Technical Secretariat of CAMRE, UNEP Regional Office for West Asia (ROWA) and The Economic and Social Commission for West Asia (ESCWA) was formed to coordinate the regional report for the WSSD in cooperation with Member States of the League of Arab States and the other UN and regional organizations, including the Joint Committee on Environment and Development in the Arab Region (JCEDAR). Accordingly, many consultative forums have been convened to reconsolidate and redefine sustainable development principles and goals for the region. The response and extent of participation of the various stakeholders in the region has been encouraging. A number of regional consultations and declarations on sustainable development have been issued by Arab government officials, non-governmental organizations (NGOs), industrialists, regional organizations and national governments. The *Jeddah Declaration* (October 2000) identifies key environmental principles from an Islamic perspective. The regional report entitled "*Perspectives of Environmental Action in the Arab World*" subsequently led to the adoption of the "*Abu Dhabi Declaration: Perspectives of Arab Environmental Action*" by CAMRE in February 2001. The first priority of this new platform calls for the need to alleviate poverty in the region while pursuing an environmental strategy that can contribute to the achievement of sustainable development.

This assessment report provides the background, baselines, trends and challenges that serve to identify the progress made in achieving sustainable development over the past ten years. It identifies the driving forces that are impacting the sustainability of our natural and cultural resources, as well as the challenges that must be addressed to strengthen progress towards sustainable development. A platform of priorities for action is subsequently provided to identify the key components of sustainable development that should be addressed in the region during the coming ten to twenty years.

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[1] ESCWA, CAMRE, UNEP, DESA, 2001. *Thematic Roundtable for the Western Asia Region in preparation for "Rio + 10" World Summit on Sustainable Development*, 9-11 April 2001, Beirut, Lebanon. (Report hereafter referred to as "Thematic RT Report")

a. Retrospective Setting in the Region

Sustainable development is a legacy of the region's historical development. The Arab Region is a cradle of the world's major civilizations and monotheistic religions, which have precipitated many of the business practices, cultural behaviour, patterns of consumption, care for the environment, and conservation and protection practices we know today. With its exceptional strategic geographic position and resources, such as oil, gas and cultural heritage, the region has always attracted foreign invaders. From the end of the 19th century until the middle of the 20th century, the region was kept captive to colonial power until independence in the 1950s, 1960s and 1970s.

The last four decades have been a major transition phase for the region, from colonial domination to independence, transforming, adjusting, and shaping new political, social, and economic grounds. Such transition was neither easy nor clear in direction, and has impacted development patterns in the region. In the 1960s and 1970s, development programmes were implemented without considering management and conservation of nature and natural resources. The vision for development prioritized investments in heavy industries and agricultural development at the expense of natural resources. Since the Earth Summit in Rio (1992), governments have become committed to taking serious actions to alleviate the impact of longstanding pollution by setting regulatory frameworks and establishing effective institutional mechanisms to integrate the principles of Agenda 21 and the vision for sustainable development in their operational programmes. In the closing decade of the 20th century, more governments began adjusting their environmental policies and laws to give greater support to community based approaches, conservation and achievement of sustainable development.

The above historical legacy has, and will continue to influence the level of implementation of sustainable development in the region. It is the determination and the will of this region to use this legacy effectively to steer development along sustainable paths to attain prosperity and welfare for its people.

II. SOCIO-ECONOMIC TRENDS, RESPONSES AND ACHIEVEMENTS

Over the past decade, the Arab Region has witnessed marked improvements in health, fertility rates, education and literacy, as well as strengthening the status of women and expanding the role of civil society. This progress has however been achieved in the face of increasing population pressures, fluctuating economic conditions, prevailing unemployment and continued poverty and regional conflict. Three fundamental challenges – poverty, unemployment and social integration – articulated at the *United Nations World Summit for Social Development* (Copenhagen, 1995) provide a strong framework for addressing the socio-economic dynamics influencing sustainable development. Linkages and responses to these challenges stymieing progress towards sustainable development also offer a means to showcase the achievements and constraints that now define a new baseline from which the region is moving towards sustainability, particularly in view of globalization and changes in information technology.

A. POPULATION AND HEALTH

1. Demographic Dynamics

The population of the Arab Region continues to increase at a fast rate from 219 million in 1990 to 284 million in 2000.[2] This level is expected to reach 371 million by the year 2010 and 454 million by 2025[3] assuming an average rate of 2.4 percent growth per year, which is high above the world average of 1.5 percent. The growing population strains natural resources and the assimilative capacity of the environment. It increases the demands on food, water, services, urban space etc... and it also increases waste, which places pressure on the environment.

2. Fertility

Regional fertility rates have declined from 6.8 in 1970-1975 to 4.7 in 1995-2000.[4] Arab countries view these figures differently, however, there has been a significant evolution in the region's perception about population growth. During the mid-1980s, most countries of the region considered their fertility rates to be low to satisfactory. However, by 1997, the great majority had shifted positions, and now considers fertility rates to be too high or satisfactory. This shift in perspective has generated increased support and implementation of policy instruments (e.g., family planning methods) that are further reducing population growth rates.

3. Advancements in Health

The health services in the Arab Region have significantly improved over the last few decades. In 1990-1998, the average percentage of the population receiving health services in the region exceeded 80 percent, the highest among developing countries. Higher levels (over 90 percent) have been achieved in 13 countries.[5] However, an imbalance remains that favors urban areas over rural areas.

Indicators of life expectancy improved for both men and women, while maternal and infant mortality levels reveal that the health conditions of women and children in the region have generally improved. The average life expectancy at birth rose to 64 years by 1998 from a low level of 51 years in 1970. Levels over 70 years are found in ten countries, while lower levels remain in Djibouti, Sudan, Somalia,

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[2] ESCWA, *Women and Men in the Arab Region: A Statistical Portrait, 2000,* Document #: E/ESCWA/STAT/1999/1/ 26 November 1999, English, New York: United Nations 1999:
League of Arab States, 2000. Arab Unified Economic Report (Arab World);
UNSPD, 1998. UN World Population Prospects. United Nations Secretariat Population Division. New York.

[3] ESCWA, op. cit.

[4] UNDP (2000, 1999,1998). Human Development Report Series. UNDP , New York. Internet:http://www.undp.org.

[5] League of Arab States, 2000. Arab Unified Economic Report (Arab World).

Iraq, Mauritania and Yemen. In general, improvement in life expectancy for women is higher than men, averaging around 70 years. Infant mortality rate dropped from 77 per 1,000 live births in 1980 to 41 in 1998. The under-five mortality rate also improved significantly between 1980 and 1999 falling from 110 to 52 deaths per 1,000 children which indicates improvements in child nutrition and health.[6] Immunization of infants has also generally improved.[7] This progress is largely attributed to the improvement of health care services, higher educational levels, higher family income levels and an increase in the number of health facilities and services.[8] However, these figures and successes are not applicable to countries witnessing military conflicts such as the Palestinian territories, Iraq and Somalia.

B. ECONOMIC GROWTH, POVERTY AND ACCESS TO PUBLIC SERVICES

Economic growth in the Arab Region has experienced cyclic fluctuations in the last few decades associated with the region's instability and fluctuating oil market. The 1960s and particularly the 1970s were witness to high economic growth in most countries of the region, as a result of high revenues from oil exports. The 1980s however were a hard decade for the Arab Region, especially in the oil exporting countries.

After a slow growth period in the early 1990s, the economies of most countries of the region have recovered. The total GDP of the Arab Region grew considerably, nearly doubling over the last decade, however, the rate of regional economic growth remained around 3 percent in real GDP. There are significant disparities in per capita GDP among the countries of the region. In 1999, the per capita GDP exceeded US$ 13,000 in Qatar, Emirates and Kuwait, while it was less than US$ 1,000 in Djibouti, and US$ 500 in Sudan, Mauritania, and Yemen.[9] Per capita GDP for Iraq stood at only US$ 202 in 2000, a drop from US$ 660 in 1990 prior to the Gulf War.[10]

The economic gains of the 1990s are also the result of recent economic reform policies in the countries of the region to instigate a broad-based economic recovery and resolve major challenges including high unemployment. Most countries of the Arab Region have undergone economic reform and restructuring, promoting market economies, decentralization and lowered inflation rates. The region has witnessed substantial liberalization and privatization efforts associated with increases in revenues and propagation of secondary industries.

Much of the economic growth in the region is dependent on exploitation and exportation of natural resources. While oil was the main source of revenue, phosphate and nitrate fertilizers, agriculture, and agro-industry exports have supported the vertical integration of the regional economy. Over the last decade, regional governments have come to realize that dependence on renewable and non-renewable natural resource based industries is unsustainable, not only for the environment, but also for socio-economic development.[11] Most Arab governments thus now support economic diversification measures, albeit with various levels of success, with Tunisia, Egypt, Saudi Arabia and UAE achieving significant progress. This has already served to provide more environmentally friendly employment opportunities for increasingly educated nationals in the region, and may prove beneficial for encouraging gender balance in the workforce, as economies become more service-sector oriented.[12]

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[6] Ibid.
[7] World Bank, *World Development Indicators 2000*, Washington, DC: World Bank, 2000, p. 94-96 and World Bank, *World Development Indicators 2001*, Washington, DC: World Bank, 2001.
[8] WAD/SDIPD, "Advancement of Women and Gender Equality: Contribution to Rio+10".
[9] League of Arab States, op. cit.
[10] In current prices; ESCWA, *National Accounts Studies of the ESCWA Region*, Bulletin No. 20, New York: United Nations, 2000, p. 9 and ESCWA, *National Accounts Studies of the ESCWA Region*, Bulletin No. 14, New York: United Nations, 1994.
[11] For more information, see ESCWA and Arab Planning Institute, *Expert Group Meeting on Economic Diversification in the Arab World*, 25-27 September 2001, Beirut, Lebanon.
[12] For more information, see Simon Neaime, "Economic Diversification and Gender in the Gulf Cooperation Council Countries," paper presented at the *Expert Group Meeting on Economic Diversification in the Arab World*, ESCWA and Arab

1. Poverty and Income Inequality

Despite efforts at economic diversification, regional economic growth in the region stood below the average recorded for developing countries during the same period and generally equal to the rate of population growth, which left very little scope for improvement in living standards. While the 1980s and early 1990s witnessed significant progress in reducing poverty, it is noted that poverty reduction in the region stalled in the 1990s, reflecting the economic difficulties experienced in the 1980s. Some countries however have made marginal improvements.

Income equality is still an issue of concern in some countries, with a widening gap between rural and urban areas and the rich and poor in urban centers. While not necessarily evident in declining national GDP growth rates, the effects of income inequality are manifested in regional and national Human Development Index (HDI) values. According to the UNDP Human Development Index (1999), Bahrain, Kuwait, Qatar, United Arab Emirates and Saudi Arabia are at the high end of the Human Development Index while Djibouti, Mauritania, Sudan, Yemen, Iraq and Palestine are among the 35 developing countries with low HDI. The rest of the Arab countries fall in the medium level.

On a regional basis, the index reveals that the Arab Region experienced the second largest absolute increase in its HDI value between 1960 and 1992, during which period high growth was experienced.[13] However, while the region's HDI value was 0.631 in 1992, it stood only marginally higher at 0.648 in 1999. Furthermore, while the average HDI value for all developing countries in 1992 was only 0.541, it increased to 0.647 in 1999 matching the current value for the Arab Region. This indicates that all developing countries on average have been able to achieve more advances in human development and poverty alleviation than the Arab Region over the past decade.[14]

Traditional economic growth approaches, foreign debt, structural adjustment and increasing trends towards globalization have also contributed to exacerbating poverty in the region. While countries in the region have grown marginally richer over the past decade, benefits have not necessarily been equally distributed. For instance, the expansion of dominant industries into non-agricultural sectors has tended to favor the skilled labor force – or at least populations in urban centers – and has had little effect on alleviating rural poverty and even fueled rural-to-urban migration. Globalization and trade liberalization are increasing domestic and international competition for small and medium-sized industries that form the staple of private enterprise and employment in the region. However, these firms are poorly equipped to face the challenges of trade liberalization and the demand for higher quality products in a global marketplace, and will continue to lag behind producers in other regions unless efforts are made to build industrial capacity and assess the costs that globalization poses.[15] Furthermore, structural adjustment has subjected the public sector – usually the largest employer in the country – to combating pressures to reduce unemployment while eliminating government workforce redundancies in order to scale back public expenditures. While this remains a significant challenge for the region, international pressures pushing for fiscal and structural reform will serve to exacerbate the poverty challenges unless appropriate social safety nets are put into place.

2. Provision of Public Services

Poverty alleviation is essential for sustainable development. Programmes to combat poverty must accordingly combine social, economic and environmental dimensions. The success of these programmes, however, is fundamentally based on the ability of governments to ensure the adequate and effective provision of traditionally public services.

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[13] East Asia experienced the largest gain in HDI value during that period, see UNDP, *The Human Development Report 1994*, New York: United Nations, 1994; sourced from SDIPD, "Contribution to Rio+10 Assessment Report: Poverty".

[14] UNDP, *Human Development Report 1994*, New York: United Nations, 1994, and UNDP, *Human Development Report 2001*, New York: United Nations, 2001.

Strong social safety nets and poverty reduction initiatives are evident throughout the region, e.g. Jordan, Morocco, Oman and Yemen. Strategies have sought to integrate various dimensions of sustainability. For instance, Sudan and Djibouti have made special efforts to link their national poverty alleviation strategies with environmental action plans so as to have integrated approaches to sustainable development.[16] Despite this progress, global economic downturns and the slowing pace of regional economic growth have forced many countries of the region to rethink their social service strategies. Indeed, even some GCC countries are beginning to rationalize public expenditures in the face of declining oil revenues. This poses serious implications for the future of the welfare state and has prompted some Gulf governments to consider a role for the private sector in the provision of water and sanitation services, healthcare and social security services.[17]

Furthermore, Arab countries still need to combat the unbalanced provision and access to basic services. For instance, rural, remote and marginalized communities in urban areas are in need of better infrastructure, education, job opportunities, healthcare, housing and public services. The concentration of migrant laborers, refugees and the displaced in marginalized urban areas around several Arab cities has led to the emergence of shantytowns that lack access to electricity, water and sanitation networks. Furthermore, while the region's most-poor might reside in rural areas in some countries, the most vulnerable often are in urban settings living just at the brink of poverty. For instance, while Jordan has made great strides in providing government assistance to women, the elderly and the disabled, its policy focuses on the "always poor" and has neglected the "sometimes poor" who are particularly vulnerable to economic reforms and external shocks.[18] In Yemen, while urban and rural poverty are about equal, it is estimated that 16 percent of the national population live on under $1 a day, while over 45 percent live on less than $2 per day illustrating the vulnerability of nearly half the population.[19] National poverty programmes must thus take into consideration not only the most poor, but also the near poor.

Food security remains a constraint for many Arab countries seeking to alleviate poverty, particularly in terms of the trade-off between agricultural expansion and water scarcity, as well as migration from rural to urban centers.[20] Food subsidies have consequently become a difficult political challenge for governments as they seek to assist the urban and rural poor while balancing the pressures of globalization and economic restructuring.

There is also an important gender dimension to poverty and access to social services. Women and children generally suffer the most under extreme poverty and bear the brunt of economic downturns and environmental degradation.[21] With civil conflicts and emigration continuing to plague the region, the number of female heads of households has increased. While poor female heads of households may have capabilities to work outside the home or obtain social assistance, the opportunity cost of securing these advantages must be weighed against the cost of transport, childcare and purchasing appropriate clothing, which limits their ability to reap social benefits.[22] The situation in the Palestinian and Occupied Arab Territories and refugee camps represents the worst conditions in the region.

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[16] UNDP/ROA, 2001. Country presentations of the WSSD Process for Sudan and Djibouti, World Summit on Sustainable Development: *National Assessment Process, Arab States Regional Workshop*, 19-20 September 2001, Beirut, Lebanon.
[17] SDIPD Ch. 6 in ESCWA, *Survey of Economic and Social Development in the ESCWA Region 2000-2001*, electronic draft.
[18] World Bank, *World Development Report 2000-2001*, Oxford University Press, 2000.
[19] World Bank, *World Development Indicators 2001*, Washington, DC: World Bank, 2001.
[20] *Regional Stakeholders Roundtable in Preparation for The World Summit on Sustainable Development WSSD*, 23-25 September 2001, Manama, Bahrain.
[21] Thematic RT Report.
[22] SDIPD, "Female-headed households in selected conflict-stricken ESCWA areas: an exploratory survey for formulating poverty alleviation policies".

C. EDUCATION AND EMPLOYMENT

1. Education and Illiteracy

By the 1970s, most countries in the region had adopted policies and taken measures to improve educational standards.[23] Progress has been significant throughout the region, with GCC countries witnessing the highest levels of school enrolment for girls at all levels of education throughout the 1990s. In some countries, such as Bahrain, Kuwait and the United Arab Emirates, there were more than 100 girls enrolled for every 100 boys, thus achieving full school enrolment at several levels of education. In other countries the gender gap persists in favor of males.[24]

Over the past few decades, public expenditure on education in the Arab Region has exponentially risen. It represents about 5.1 percent of GDP compared to 3.8 and 5.5 percent for developing and developed countries, respectively. In spite the progress made, there remain significant problems, such as the high rate of students dropping out from school, the overall low percentage of girls enrolment relative to boys, low enrolment rates in rural areas specially among girls, the disharmony between education and the market needs and the deterioration in the quality of education. It is expected that the education sector will require an increase in budget allocation from the countries of the region to meet the needs of the growing population, a situation that some countries budget capacities will not be able to bear.[25]

The average illiteracy percentage in the population of the Arab countries aging 15 and above has dropped from 49 in 1990 to 43 percent in 1998, however it remains the highest among the world regions. There are nearly 70 million illiterates in the Arab Region, which represent one of the major constraints for sustainable development in the region[26]. Nevertheless, illiteracy is being eliminated in the region through initiatives that promote increased school enrollment, rather than adult literacy campaigns.[27] This has become a regional approach despite the fact that illiteracy among individuals over 65 years old is significant compared to other regions. Female illiteracy levels have also decreased in most Arab countries, although the gap between female and male illiteracy levels persists. One of the largest improvement in literacy rates for women in the region took place in Saudi Arabia where illiteracy rates dropped by 19 percent between 1995 and 2000.[28] Yemen continues to have the highest female illiteracy rate in the region at 75 percent.[29]

2. Employment Challenges

Unemployment and underemployment represent major challenges in the Arab countries, including the GCC countries, which are considered labor-importing countries. The total work force in the Arab countries is estimated to be 98 million representing 35.9 percent on the population of the region. The average rate of unemployment in the region however exceeds 20 percent of the total work force.[30] This may be attributed to high population growth rates and the inability of the domestic market in creating additional work opportunities for the newcomers to the labor market, particularly youth, young graduates and women. Low-level education and inappropriate training make it even more difficult for a newcomer to engage in productive employment that demands skilled manpower. Consequently there is an excess supply of unskilled job seekers with an excess demand for highly

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[23] WAD/SDIPD, op. cit.
[24] Ibid.
[25] League of Arab States, op. cit.
[26] Ibid.
[27] ESCWA, *Youth in the Urban Environment in the ESCWA Region*, Document # E/ESCWA/HS/1997/7, 16 November 1997, English, New York: United Nations, 1998.
[28] WAD/SDIPD, op. cit.
[29] Ibid.
[30] League of Arab States, op. cit.

skilled workers, resulting in the import of skilled foreign labor. This represents serious structural challenges for government and the private sector. The main focus should thus be on reducing additions to the unemployed and underemployed rather than the total unemployment situation. If new entrants to the labor force do not find appropriate jobs, they will then pose a threat to economic stability and become more difficult to integrate into labor markets over time. Unemployment also prompts changes in life styles and consumption patterns and may generate social unrest. Accordingly, there is a dire need to link education and employment, intensify vocational training and reconsider modes of production from capital to labor intensive methods so as to avoid long-term unemployment.

a) Labor Migration

While many parts of the Arab Region suffer from brain drain rural-to-urban migration and high unemployment, most GCC countries have traditionally been net importers of labor with many Mashreq and North African countries becoming havens for unskilled migrant workers. These labor migration trends pose special challenges for the region related to (1) brain drain of the region's skilled nationals; (2) nationalization of labor forces, which is displacing migrant labor; (3) the repatriation of expatriate labor during times of civil crisis; and (4) the social integration of an ethnically and culturally diverse labor force in labor importing countries.

3. Technical and Vocational Training

The region has increased investment in education and training over the past decade to better serve marginalized groups. Special focus has recently been placed on improving vocational and technical training as a means to better meet the needs of government and the private sector employers. Key challenges still persist related to the effectiveness and appropriateness of curriculums and the need for accreditation and certification systems.

There has also been a growth in private sector training over the past decade. However, private associations and business centers need to improve the provision of technical training services to better target small entrepreneurs. For instance, European Business Centers in Egypt, Jordan and Syria and the Vocational Training Corporation in Jordan have been successful in attracting medium to large-scale enterprises (50 plus employees) to various technical programmes.

D. SOCIAL INTEGRATION AND THE STATE OF CIVIL SOCIETY

Individuals and institutions are the basic contributors to social capital formation. As governments have become less interventionist and more decentralized, the role of civil society has become increasingly important in building social capital and representing private interests. Social integration of various actors and organizations is integral to the sustainable development process.

1. Women

While much progress has been achieved over the past decade in improving the education, health and employment levels of women in the region, illiteracy remains a problem. Work performed by women remains in most cases underestimated and undervalued and receives lower pay than men for work of equal value. Women are also the hardest hit during recessions and periods of high unemployment and still suffer from *de facto* discrimination, if not *de jure*.[31]

Nevertheless, most governments have taken serious steps towards the social, economic and political integration of women.[32] For instance, by December 2000, nearly all countries had established National

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[31] Fatma Sbaity Kassem, Chief, Women and Development Unit, Social Development Issues and Policies Division, "Social Aspects of sustainable development in the ESCWA region." Presentation to the *Thematic Round Table for the Western Asia Region in preparation for "Rio + 10" World Summit on Sustainable Development*, 9 April 2001, Beirut, Lebanon.

[32] WAD/SDIPD, op. cit.

Mechanisms for Women to address women's issues at the national level. The political participation of women in government has also gradually improved. For example, more women are running for elections and practicing their suffrage rights, whether at the municipal (Jordan and Qatar), parliamentary (Egypt and Tunisia) or even the ministerial (Yemen) level. In Saudi Arabia women were allowed for the first time on 3 October 1999 to attend a Consultative Council meeting. In an unprecedented step, the Yemeni government appointed a woman as Minister of Human Rights. This constitutes a clear acknowledgement of the critical role of women in society and is also indicative of a rising awareness for increasing the political participation of women.

Another significant development is that Saudi Arabia signed the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), but with reservations on the clauses that conflict with religious convictions and national sovereignty. This is a major achievement on the road to gender equality in the Kingdom of Saudi Arabia. In addition, it is also noteworthy to mention that a leading figure in Palestinian politics and a former Minister, Ms. Hanan Ashrawi was named official spokeswoman for the League of Arab States.[33]

Women have also increased their contribution to the formal economic sector. Over the last decade, most countries witnessed a general decline in the participation of women in the agriculture sector in favor of a higher participation in the service sector.[34] While already significant in North African countries, one of the highest percentages of economically active women in the services sector can be found in the GCC countries (86 percent) with Qatar revealing a full female participation rate.[35]

2. *Children and Youth*

Decades of high fertility rates in the region have resulted in an ever-increasing number of young people. In 1997, the population under the age of 15 ranged from 40 to 49 percent in 12 Arab countries and about one third in the rest of the countries, while the population aging between 15-65 ranged from 48 percent for Yemen to 73 for Qatar.[36]

These demographic trends pose significant challenges for the region, particularly as governments seek to increase and improve the provision of education, employment, healthcare, and social services. Nevertheless, it could be the engine for sustainable development if trained properly and managed productively.

Regional trends in children and youth policies in the region include: (1) increasing access to quality education and eradicating illiteracy,[37] (2) improving sports, recreational and cultural facilities, particularly in urban areas, (3) strengthening youth employment generation and training[38] and (4) addressing poverty, conflict, disability and violence from the perspective of children and youth. Specific activities targeting children and youth engagement in the sustainable development process include the establishment of an environmental youth camp by a Jordanian NGO that will promote biodiversity conservation, land degradation control and the sustainable use of natural resources.[39]

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[33] WAD/SDIPD, op. cit.

[34] It should be noted, however, that women's contribution in the agriculture sector often goes underestimated and unaccounted for due to the lack of appropriate tools and techniques for measuring, quantifying and assessing data; see ibid.

[35] It should be noted, however, that women's contribution in the agriculture sector often goes underestimated and unaccounted for due to the lack of appropriate tools and techniques for measuring, quantifying and assessing data; see ibid.

[36] League of Arab States, op. cit.

[37] ESCWA, "Arab Youth Forum Convened in Beirut," *ESCWA Update*, Vol. 1, No. 3, August 2001.

[38] ESCWA, *Youth in the Urban Environment in the ESCWA Region*, Document # E/ESCWA/HS/1997/7, English, New York: United Nations, 1998.

[39] The Environmental Youth Camp in Yajooz is being implemented by the Cultural Society for Youth and Childhood with funding provided in 2000 by the Global Environment Fund (GEF) Small Grants Programme. For more information, see UNDP-Jordan, "UNDP awards grants to three environmental projects," Amman, 18 April 2000, http://www.arab-business.net/undp/press53.html.

3. *The Aged, Disabled and the Arab Family*

The population composition of the elderly (over 65 years of age) in the Arab countries is considerably smaller than the population of children (0-14) and growing at a slower pace than that of other regions. By contrast, the number of disabled individuals in the region is growing. The scale and scope of the disability challenge affects all age groups and has increased due to armed conflicts in the region and the aftermath of civil unrest and physical occupation of lands,[40] e.g. Algeria, Iraq, Kuwait, Lebanon, Palestine, and Sudan.

While social welfare programmes in most countries of the region have improved over the last decade, public expenditures on social programmes providing care for the elderly and disabled remains less than adequate. This has been a particular challenge in conflict areas. For instance, over 32 percent of poor families in the West Bank have a disabled family member (as compared to 11 percent of well-off families),[41] which illustrates the growing linkage between disability, poverty and conflict. Conflict also exacerbates unequal distribution of services to the disabled in rural and urban areas.

Where public services are inadequate, the Arab family has traditionally filled the gap in the provision of social services by assisting members in need due to cultural and religious values.[42] However, through the process of social transformation, the structure of the Arab family has been gradually shifting from the extended to the nuclear form in both cities and rural areas of the region.[43] The increased entry of women into the labor force has also put a strain on the family's ability to perform domestic functions related to the care of children, the sick, the disabled and elderly family members. As a result, community associations and non-governmental organizations have become increasingly important forces in support of social integration.

4. *Non-Governmental Organizations and Private Sector Associations*

Since UNCED, there has been rapid growth in the number of NGOs registered in the region over the past several years.[44] There has also been increased participation in NGOs, community groups, private voluntary organizations, business associations and labor syndicates.[45] For instance, 50 percent of NGOs based in Amman now operate with the help of over 40,000 volunteers.[46] These trends are fueled by three recent developments: (1) government decrees facilitating NGO registration and freedom of activity; (2) increased international funding for NGO activities in developing countries; and (3) the transformation of many charity groups based on kinship, ethnicity, and religion into more socially integrated service organizations.[47] This transition has been particularly evident in cities where marginalized groups (e.g., women, migrant populations, poor communities), with traditionally limited access to state and municipal services, have been organized to provide themselves with childcare, housing, local water and sewage networks, waste management facilities, street cleaning and other

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[40] ESCWA, *Survey of Economic and Social Developments in the ESCWA Region 1997-1998*, Document #: E/ESCWA/ED/1998/5, English, New York: United Nations, 2 June 1998.
[41] Ibid.
[42] SDIPD Ch. 6 in ESCWA, *Survey of Economic and Social Development in the ESCWA Region 2000-2001*, electronic draft.
[43] Ibid.
[44] Amani Kandil, "The role of community-based organizations and civil society in follow-up to the resolutions and recommendations of the World Summit for Social Development", a working paper presented at the Regional Preparatory Meeting for the Arab Conference on Integrated Follow-up to Global Conferences: Follow-up of the World Summit for Social Development, Beirut, 8-11 December 1998 (E/ESCWA/SD/1998/WG.1/6) (in Arabic), as noted in SDIPD, loc. cit.
[45] Thematic RT Report.
[46] Roula Majdalani, "The changing role of NGOs in Jordan: an emerging actor in development," *Jordanies*, 12:2 (1996).
[47] SDIPD, loc. cit.

social services.[48] NGOs have been particularly effective in increasing public environmental awareness, organizing community clean-up campaigns and building local capacity.[49]

Another trend in NGO development has been their gradual shift from welfare providers to social advocates. NGOs in the region increasingly seek dialogue with government counterparts so as to solicit participatory approaches to decision-making as well as forge synergies between programmes.[50] Nevertheless, more communication is needed in order to support better consultation and coordination between political institutions and public stakeholder groups.

There has also been a rise in the number of private business associations in the region, as well as an increase in the level of participation in such groups. However, the number of entrepreneurial networks remains limited because of differences in scale and scope between large enterprises and small and medium sized enterprises (SMEs), general mistrust between business owners and managers and the absence of programmes to promote inter-firm collaboration.[51]

E. GLOBALIZATION, COMMUNICATION, INFORMATION TECHNOLOGY AND THE IMPACT ON CULTURE

Progressive dismantling of barriers to trade and capital mobility, together with fundamental technological advances and steadily declining costs of transportation, communication and computing have made globalization possible. Despite the promoted ideas of the benefits of globalization, such as faster economic growth, higher living standards, accelerated innovation and diffusion of technology and management skills, new economic opportunities for individuals and countries alike, the Arab countries have not yet felt these benefits. Globalization has meant greater vulnerability to unfamiliar and unpredictable forces that can bring on economic instability and social dislocation. As such, globalization poses constraints on achieving sustainable development in the Arab Region. Therefore, there is a growing concern in the Arab countries regarding the social, political and economic risks associated with globalization, namely those potentially limiting the ability of governments to engage in social welfare and environmental protection in order to maintain international competitiveness.

The need for the right environment to integrate into the globalization process is being felt in the Arab countries, including the provision of essential infrastructures, services and institutional set up. However, concern over the need to take measures to avoid the negative impacts of globalization and to address the costs associated with globalization on technical, economic, environmental and social levels is also being expressed. There is also growing anxiety over the loss of cultural values through the globalization process. To counter the undesirable norms and consumption patterns that may infiltrate to the region through globalization, it is important to promote local and Islamic cultural values.

The regional perspective on globalization is also influenced by its social and cultural impacts on various segments of Arab society, namely the uneven distribution of benefits (both regionally and nationally) associated with expanded global markets and the rapid pace of technological change generated by the information revolution.[52]

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[48] SDIPD, loc. cit..
[49] ESCWA, *Sustainable Development Planning in ESCWA Member States*, forthcoming from ECU/ENRED, 2001.
[50] Fatma Sbaity Kassem, Chief, Women and Development Unit, Social Development Issues and Policies Division, "Social Aspects of sustainable development in the ESCWA region," Presentation to the Thematic Round Table for the Western Asia Region in preparation for "Rio + 10" World Summit on Sustainable Development, 9 April 2001, Beirut, Lebanon.
[51] ESCWA, *Review of Industrial Strategies and Policies: Preparing for the Twenty-First Century*, forthcoming from ID/SIPD, 2001.
[52] Thematic RT Report.

1. Information and Communication Technologies

Information and communication technologies (ICT) are the driving forces fueling globalization.[53] They are also effective instruments for supporting economic and social development.[54] However, large segments of the Arab population are vulnerable to the negative effects of globalization and the fast proliferation of ICT.[55] For instance, ICT has replaced jobs in the service industry where employment gains and training have been most significant.[56] ICT and other advanced technologies have also not been properly or adequately diffused, particularly in non-GCC countries.[57] Most Arab states were slow to launch into the ICT revolution and the Internet because of (1) outdated communication infrastructure; (2) limited availability of Arabic-language support systems and services; (3) government concern regarding the social and security implications of a "plugged-in" population; and (4) the cost of hardware.[58]

Nevertheless, since the mid-1990s the regional situation has changed significantly. For instance, in 1999, GCC countries had an estimated teledensity for ordinary telephone lines that was about double the world average.[59] The number and quality of telephone lines and bandwidth connections have also improved at the regional level.[60] Mobile telephony has grown rapidly, with the number of mobile users to exceed the number of fixed telephone subscribers in the next few years.[61] Mobile telephone subscribers also surpass the number of Internet subscribers by ten to one, and there are three times more mobile telephones in use in the Arab Region than personal computers (PCs).[62] This presents significant opportunities for leapfrogging into expanded mobile ICT and Internet services in the absence of adequate fixed infrastructure.[63] Furthermore, while the number of PCs per capita for Egypt, Oman and Syria stood below the world average in 1999, Lebanon and some GCC states maintained high averages. Internet accounts have continued to increase at a rate of about 8 percent per month for the past two years.[64] With PC prices falling and Internet access becoming more affordable, Egypt has become the fasted growing PC market in the world after China.[65] Internet and technology cities are also being developed in the UAE and Syria. These trends could serve as important means for accelerating growth, efficiency and sustainable development.

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[53] Abdulilah Dewachi, Regional Advisor on Communications and Computer Networking, "Contribution to ECOSOC report 2001 on Globalization: The issue of information and communication technology," 15 June 2001.
[54] ESCWA homepage web site.
[55] Thematic RT Report.
[56] ESCWA, *Review of Industrial Strategies and Policies: Preparing for the Twenty-First Century*, forthcoming from ID/SIPD, 2001.
[57] Abdulilah Dewachi, "Information and Communications Infrastructures of the ESCWA Region" paper presented to Expert Panel on Information Technology and Development Priorities, Competing in a Knowledge-based Global Economy, Beirut 15-6 May 2000.
[58] Abdulilah Dewachi, "Overview of Internet in Arab States," Presentation to *Arab Region Internet & Telecom Summit*, Muscat, Oman, 28-30 May 2001.
[59] Abdulilah Dewachi "Information and Communications Infrastructures of the ESCWA Region" paper presented to Expert Panel on Information Technology and Development Priorities, Competing in a Knowledge-based Global Economy, Beirut 15-6 May 2000.
[60] Dewachi, "Overview of Internet in Arab States", loc. cit.
[61] Dewachi, Regional Advisor on Communications and Computer Networking, loc. cit.
[62] Ibid.
[63] Dewachi, "Overview of Internet in Arab States", loc. cit.
[64] Ibid.
[65] Ibid.

The Digital Divide

Most Arab countries have not adequately responded to the new realities of the ICT revolution and as such there has been uneven distribution of the benefits and the access to information it provides. This has generated "digital divides" globally, between countries of the region, and among different segments of the population. For instance, 93 percent of Internet users are found in countries generating 86 percent of world GDP, while only 0.2 percent of Internet users found in countries contributing only 1 percent of world GDP.[66] Furthermore, while the Arab countries comprise 4.7 percent of the world population,[67] Arab Internet users represent only 0.5 percent (1,975,160 users) of world Internet users. Wealthier Gulf States (Kuwait, Qatar, UAE) and Lebanon have the highest penetration rates, while Egypt has emerged as the largest Internet market in the Arab world.[68] Egypt, UAE, Lebanon, Saudi Arabia and Kuwait account for about 82 percent of all users in the Arab Region.[69] Most Arab users access the Internet from home (72 percent), while only 4 percent access it from educational institutions. Most Arab Internet users are under 35 years of age (70 percent), while only 4 percent are women.[70] There are evident digital divides between rural and urban communities, as well as between the privileged and under-privileged communities in urban areas.[71]

There is a growing conviction that improved public access to local and global information and services provided by the Internet can help the Arab Region experience a smooth transition into a knowledge-based society[72] that can more easily support sustainable development. Where home access is limited, community-based approaches need to be advanced by facilitating licensing for Internet cafes or by imitating the Egyptian model of creating multipurpose community telecenters (MCTs).[73] This will not only help to improve public access, but also foster the creation of local information content that can facilitate linkages between government and citizens, community groups and private sector actors.

2. The Language Challenge

Language is an important impediment to greater access to information in the Arab Region. Arabic is one of the top ten most used languages in the world, however its presence on the Internet is not even among the top twenty.[74] While most in academia or business are versatile in English, there is limited content and a lack of relevant applications available for the general Arabic-speaking public.[75] Furthermore, most Internet content on sustainable development from official and non-governmental sources is presented in English, with translated versions often provided in French and/or Spanish. Arabic language information on sustainable development, however, remains lacking both on the

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[66] Ibid.
[67] Arab states in this context means Egypt, Iraq, Jordan, Lebanon Syria, West Bank & Gaza, Yemen (Eastern Arab States; Algeria, Comoros, Djibouti, Libya, Mauritania, Morocco, Somalia, Sudan, Tunisia (North African Arab States); and Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE (Gulf States).
[68] Dewachi, Regional Advisor on Communications and Computer Networking, loc. cit.
[69] Ibid.
[70] Women represent 38 percent of Internet users in the USA, 25 percent in Brazil and 17 percent in Japan. See Abdulilah Dewachi, "Overview of Internet in Arab States," Presentation to *Arab Region Internet & Telecom Summit*, Muscat, Oman, 28-30 May 2001.
[71] Dewachi, Regional Advisor on Communications and Computer Networking, loc. cit.
[72] Ibid.
[73] Ibid.
[74] Dewachi, "Overview of Internet in Arab States", loc. cit.
[75] Dewachi, Regional Advisor on Communications and Computer Networking, loc. cit.

Internet and in downloadable hard copy publications. This generates a language barrier that impedes the comprehension and effective implementation of sustainable development in the region.[76]

During the 1970s and 1980s, government laboratories, public universities and private companies led initiatives for the Arabization of information technology (IT). During the early 1990s demand for Arabic software and applications have increased. Governments are slowly putting applications on-line for citizens (e.g., the UAE) and Arabic-language music, art and religion content have also expanded. Furthermore, economic gains are being reaped by increased demand for Arabic IT skills. For instance, Jordan has already become a US outsourcing market for Arabic software and website design (with the sector likely generating 30,000 jobs and US$ 150 million over the next five years).[77] Egypt could become a leader in Arabic content given its dominance in the Arabic language media industry. These trends could provide significant opportunities for diversifying the region's economy into service sectors that are less polluting and increase the efficiency of information transactions. It is hoped that ICT structures will ultimately facilitate regional innovation, economic integration and sustainable development.

3. *Impact on Culture*

ICT not only influences economic efficiency, but also society and culture. Televisions, satellite dishes, mobile telephones and the Internet are making the world smaller and influencing social structures traditionally based on community cohesion and the family. As ICT fuels globalization, information and ideas become more accessible allowing the general public an increased opportunity to understand and engage in global development and local dialogue – which are important aspects of sustainable development. There is a general trend to pursue Arabization of quality on-line content, the integration of IT into educational systems, the promotion of networked electronic communities and government services. There is also appreciation of ICT systems through the media and training programmes and the reinforcement of synergies between traditional values and new technologies.[78] However, some in the region equate "globalization" with "westernization,"[79] which has delayed Arab pursuit of ICT in some areas. A debate on how to preserve cultural identity, while benefiting from technological advances on par with rest of the world is now going on.[80]

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[76] Thematic RT Report.
[77] Dewachi, "Overview of Internet in Arab States", loc. cit.
[78] ESCWA, *Review of Industrial Strategies and Policies: Preparing for the Twenty-First Century*, forthcoming from ID/SIPD, 2001.
[79] Hafed H. Al-Hinai, "A Study on the Role of Globalization in Labor Market Development".
[80] Ibid.

III. MAJOR DRIVING FORCES INFLUENCING SUSTAINABLE DEVELOPMENT

There are specific economic and social driving forces that are directly impacting the sustainability of the regional environment. These pressures and their relationship to sustainability will be elucidated below, while social, economic and environmental trends, challenges and responses will be elaborated in the following sections.

A. OIL AND GAS PRODUCTION AND MINING OF NON-RENEWABLE NATURAL RESOURCES

Development in the region is mostly based on the exploitation of exhaustible natural resources. Accordingly, sustainable development assessments must not only take into consideration the implications that oil, gas, phosphate and groundwater mining pose for the environment, but also their contribution as the engine for regional development. The share of the oil, gas and mining sectors (extracting industry) to regional GDP has fluctuated and fallen from 23 percent in 1990 to 19 percent in 1999.[81] While this indicates a trend towards economic diversification, it also exposes the reduction in revenues generated by the oil and gas sectors and the tightening of funds available for social, economic and environmental programmes in the region. Furthermore, while expansion into value-added industries is a positive development, these new sectors may present a different set of environmental concerns if not appropriately managed.

1. Oil And Gas Production

The region has tremendous oil and natural gas resources and accounts for a major share of the world's total proven reserves. However, distribution of reserves varies throughout the region and is concentrated in the Gulf, Algeria, and Libya, with rising contribution from Egypt, Syria, Yemen, Tunisia and Sudan, whereas some countries lack sufficient resources to satisfy their present and future energy needs.[82] Oil and gas revenues also significantly contribute to the regional economy. Progress in economic diversification, however, reduced the sector's contribution to regional GDP to 15 percent, combined with mining it contributed 19 percent in 1999.[83] This leaves regional investment and development vulnerable to wide fluctuations in the world oil market, as was dramatically manifested in the sharp swings in crude oil prices during the late 1990s from record lows of US$ 10/barrel in 1998 to highs of around US$ 30/barrel in early 1999.[84]

Oil and gas resources in the region not only play an important role as primary exports, but also as supporting inputs for energy-intensive, value-added industries that are proliferating throughout the region. This poses twin challenges for sustainable development. On the first level, there are air, water and marine quality impacts posed by intensive oil and gas exploitation, processing, reformulation and shipping that characterize the GCC sub-region and oil-exporting countries in North Africa. Some effort has been made in creating regional response systems to oil spills in regional seas, but more planning and coordination is needed. Oil spills not only threaten the sustainability of marine and coastal environments, but also clog desalination plants.

On a secondary level, there are air and water pollution impacts generated by expanding energy-intensive industries, namely in the petrochemicals, fertilizers, steel, aluminum and cement sectors. Low-cost and low quality petroleum also permits the fueling of joint power-water desalination plants in the Gulf. These installations generate air emissions (NO_x, SO_x, particulates and hydrocarbons) as well as wastewater effluent through massive brine and cooling water discharges, which impacts fisheries and threaten to make the Gulf one of the world's most polluted seas.[85]

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[81] League of Arab States, op. cit.
[82] EIS/ENRED/ESCWA Contribution to the Regional Assessment Report for Rio+10.
[83] League of Arab States, op. cit.
[84] ESCWA, *Review of Industrial Strategies and Policies ...* .
[85] Thematic RT Report.

2. *Mining of Natural Resources*

The region holds considerable reserves of iron, copper, phosphate and potash. For instance, the know reserve of iron is about 16.8 billion tons spread mainly in Mauritania, Libya, Saudi Arabia, Egypt, and Syria.[86] Mining and processing of industrial minerals and metals has increased alongside fossil fuel extraction throughout the region, and is considered an important source of foreign currency in Egypt, Syria, Yemen, Tunisia and Sudan. Extracting iron in Mauritania, Algeria and Libya represents 6 percent of the extracting industries outputs, while extracting phosphate in Morocco, Jordan, Tunisia, Egypt and Syria, and potash in Jordan represents 12 percent of the total extracting industries outputs. Mining in general (metallic and non metallic ores) account for 18 percent of extracting industries in the Arab Region. [87]

Algeria, Jordan, Morocco and Tunisia are among the world's major producers and exporters of phosphates and phosphate-based fertilizers. While a non-renewable natural resource industry, the environmental dimension of the sector's expansion rests with the land and sea transport of phosphate products and their accidental spillage that is threatening marine life in coastal waters. Quarrying, stone crushing and cement production has also increased in Jordan, Lebanon and the West Bank, despite increased incidence of land subsidence, occupational health and safety problems, asthma among children, and health impacts on neighboring communities.[88] Saudi Arabia, Kuwait and Qatar are also seeking to expand their energy-intensive steel and aluminum sectors, with bauxite from Egypt and Bahrain and cheap domestic energy, which contributes to air emissions. Egypt has also begun to mine for coal, however, its environmental law of 1994 now requires environmental impact assessments to be conducted for all proposed mining and quarrying facilities.

Accordingly, in addition to environmental and environmental health concerns related to the extraction and processing of non-renewable industrial minerals, expansion of transport infrastructure may pose an additional challenge. This is because mineral deposits in most countries of the region are located in remote areas far from processing facilities and ports and thus the movement poses further risks to air, land and marine resources.

B. INDUSTRIAL DEVELOPMENT

Industrial development is a vital component of the development processes of the Arab Region providing an important source of national income through trade, creating jobs and adding to the value of the primary products. Industrial development is pursued for socio-economic, political and strategic national goals. It can enhance self-sufficiency, import substitution and natural resource exploitation development.

Industry contributes significantly to the gross domestic product (GDP) in the Arab countries as it accounts for about 11 percent of the region's GDP (not including oil extraction). The average growth rate of industry in the Arab Region, according to recent estimates, indicates that during the period from 1980-1990, the average annual growth was 0.6 percent while it has increased during the period from 1990-1997 to 2.3 percent.[89] Most countries of the region have sought to reinvigorate the industrial sector by reviewing their strategies and policies. This is particularly important for small and medium sized enterprises (SMEs) in view of increasing trade liberalization, differentiation between product and process standards in various markets, and competition from lower-cost, more efficient producers in home markets and traditional export markets. SMEs represent a significant share of regional employment.

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[86] League of Arab States, op. cit.
[87] Ibid.
[88] MedPolicies Initiative, Mediterranean Environmental Technical Assistance Program, "The Impact of Stone-Crushers on Air Quality: A Case Study on the West Bank – Phase I," *Social and Economic Aspects of Air Quality in the Mediterranean Region: Selected Case Studies*, Beirut and Cambridge: Harvard Institute for International Development, 2000.
[89] League of Arab States, op. cit.

Nevertheless, attempts to restructure and diversify economies of the region have sometimes been misguided and imposed additional strains on limited natural resources. For instance, while programmes to expand agricultural development and promote the vertical integration of the agro-food industry sought to increase opportunities for labor and trade, they also imposed unsustainable pressures on nonrenewable water resources needed for irrigating and reclaiming desert and marginal lands. Limited linkages between national and regional agricultural producers and agro-food manufacturers have yielded new inefficiencies and environmental impacts related to the long-distance transport of goods, the virtual export of water via agricultural produce, and water and land degradation. Effective management and monitoring of industrial pollution and hazardous waste also remain as a significant challenge for industrialists and government regulators.

Manufacturing Industry

The industrial sector is composed of mainly extracting and manufacturing industries. Over the last decade, the contribution of the manufacturing industries to GDP has steadily increased in contrast to the continued reduction of the extracting industries contribution, reflecting the trend to industrial diversification and the desire to shift away from high dependency on crude oil and raw minerals exports. Manufacturing industries, however, contribute only 11.4 percent of the GDP of the region.[90]

Even though manufacturing in the region remains dependent on primary production, the sector has slowly grown. Some of the fastest-growing companies in the Arab Region are manufacturers of cement, bottled water, textiles and cables.[91] However, energy-intensive products continue to characterize manufacturing in oil-exporting countries during the late 1990s, namely fertilizers, steel and petrochemicals. The more diversified economies of the region continue to focus on traditional industries such as food processing and textiles,[92] which are less environmentally damaging compared to the mineral-based industries, but still have a heavy impact on water resources through demand for water and release of effluents. There has also been a gradual shift towards the production of intermediate and capital goods, particularly chemicals, rubber, plastics, iron and electrical machinery.[93] While this could signal a development of the sector and an increase in back to back linkages, special care should be taken that the environmental impacts of increased production in these new sectors do not adversely affect air and water quality in communities surrounding industrial areas.

C. AGRICULTURAL DEVELOPMENT

Agriculture and food production is a significant contributor to the national economy of most countries of the Arab Region, reaching US$ 80 billion in 1998 and averaging 12-13 percent of regional GDP.[94] Countries of the region could be categorized into three levels; *Relatively high contribution* with a range of 16-49 percent of GDP in seven countries arranged in descending order: Sudan, Iraq, Syria, Mauritania, Morocco, Yemen and Egypt. This group accounted for about 89 percent of the total regional agricultural production in 1998. *Relatively moderate contributions* in five countries with agriculture representing 7-12 percent of GDP, namely Tunisia, Algeria, Lebanon, Libya and Saudi Arabia. Countries where the sector contributes a *relatively low contribution* to GDP are UAE, Oman Jordan, Djibouti, Bahrain, Qatar and Kuwait where it ranges from 0.5-3.5 percent.[95]

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[90] Ibid.
[91] ESCWA, *Review of Industrial Strategies and Policies ...* .
[92] Ibid.
[93] Ibid.
[94] League of Arab States, op. cit.
[95] UNEP, CEDARE, ACSAD, AGU, *State of Environment in the Arab World*, draft report, 2000, with figures based on League of Arab States, op. cit.

Patterns of agricultural output in the region remained relatively constant between 1990 and 1999, with cereal and pulses experiencing small declines, and industrial crops witnessing a slight expansion. Of the industrial crops, olives witnessed the greatest gains followed by sugar cane, while output and the land area under cotton and tobacco cultivation fell slightly. This implies the importance of agriculture as a significant driver impacting various aspects of sustainable development, namely labor, rural-to-urban migration, water use, land management, research and technology development, food security, as well as society and culture.

On the economic policy front, agricultural protectionism continues throughout the region, as do heavy subsidies for irrigation water (the primary user of freshwater in the region), agrochemicals and land, which has led to unsustainable patterns of agricultural production.[96] This has rendered the sector inefficient and particularly vulnerable to trade liberalization agreements that seek to eliminate agricultural subsidies and reduce tariffs. Recent negotiations on the harmonization of agricultural norms and standards have also shifted the orientation of agricultural reform and development efforts. However, the uneven success of recent initiatives has compelled some governments to reintroduce or reinforce interventionist measures,[97] which are perpetuating negative environmental externalities.

While cultivated land use has increased in most countries since 1990,[98] so has agricultural productivity and intensity. Total fertilizer consumption has generally seen a decrease in the region,[99] however, some report intensive application of fertilizers per hectare over the past twenty years.[100] To some degree this is because some countries continue to partially subsidize fertilizer use through fixed government pricing regimes, although others have moved towards market-based retail pricing. This is because many countries have now recognized the health and environmental risks and are reducing the dependency on fertilizers, pesticides and other agri-chemicals.

Considerable efforts have been made by the countries of the region to improve field management techniques, yet, most of the cropping patterns adopted under rain fed and irrigated conditions need to be developed along innovative trends, and geared towards maximizing crop yields per unit of water in view of limited water resources. It should also be noted that the potential to expand the cultivated lands is limited to few countries including Sudan, Iraq, Mauritania, Algeria and Somalia.

Fisheries, Livestock And Feed

Fisheries are an important economic sector to selected countries in the Arab Region such as Morocco, Tunisia, Mauritania and Oman. In 1998, the total fish exports of the region stood at 431 thousands tons (966 million dollar revenue), more than half (56.2) was from Morocco. Fish landings have increased in most countries of the region since 1990 (between 1990 to 1999, fish production increased from 1,859 thousands tons to 2,639 thousands tons), but with significant increases in fishing effort. This brings into question the sustainability of the fish stock in regional seas. Fisheries resources have become increasingly threatened by over-fishing, habitat destruction, and increased coastal and marine pollution emanating from land-based sources as well as increased ship traffic.

Growth in the livestock sector and increased meat imports pose environmental and health challenges for the region. This includes the need for more experts in the veterinary sciences to prevent the spread of disease, better customs and food testing facilities for imported and domestically produced meat and feed, as well as adequate land use planning to provide sufficient open spaces for animal grazing free from encroachment by urban development.

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[96] Thematic RT Report.
[97] Ibid.
[98] League of Arab States, op. cit.
[99] UNEP et al., op. cit.
[100] World Bank, World Development Indicators 2001, Washington, D.C.: The World Bank, 2001.

D. TOURISM DEVELOPMENT

The region's share of the world tourism industry is small, amounting to 4 percent of the world total.[101] However, the sector is steadily growing with the number of tourist arrivals increasing from 17.4 million in 1990 to 27 million in 1999.[102] Tourism is also among the fastest growing sectors in the region and strongly contributes to foreign exchange earning. The sector employs 13 percent of the labor market in Egypt,[103] and offers about 600,000 jobs in Morocco,[104] and 13,000 jobs in Bahrain.[105] The neighboring Mediterranean Region, to which one third of the Arab countries belong, receives one third of the world's tourism. Drawing lessons from that experience could be of high interest to Arab countries. The sector has important social and economic ramifications linked to job creation. However, it should be added that tourism is very vulnerable to regional and international events, with extreme fluctuations in revenue occurring during periods of heightened political instability.

The geographical distribution of tourist arrivals depends on tourism type, e.g. archeological sites, museums and diving tourism as in Egypt, or religious tourism as in Saudi Arabia. While tourism is a smokeless industry, it can cause increasing environmental pressures that can seriously affect natural resources, ecosystems and cultural heritages, as well as the social structure of the host countries. Expansion of the hotel sector has also resulted in crowding in and around historic and cultural centres, as well as in protected areas in the region. Signs of environmental degradation due to tourist activities are already recorded in many areas across the region. The risk of adversely influencing cultural values and social capital of indigenous communities can also prove problematic. For instance, as urbanization and coastalization has accelerated, so has solid and liquid waste dumping into regional seas as well as waterfront erosion and the filling or destruction of coastal reefs. Limited urban environmental governance appears to be the principle source of the problem since overlapping jurisdictions between tourism, planning, municipal, water and environmental agencies as well as lax enforcement of environmental regulations have marginalized the ecological and social aspects of growth in this important economic sector.

The main challenge for the region is how to pursue the tourism development while preserving and protecting the natural resources and the environment. Most governments have realized the threats to the natural resources and the culture heritage; and are thus adopting policies and implementing measures to mitigate the environmental degradation caused by tourism. It is important to integrate tourism activities in the planning and implementation of sustainable development. Greening tourism and ecotouirsm have been introduced in many of the tourist sites in the Arab Region. Nevertheless, the efforts to preserve and protect the tourist resources in the region remain inadequate. Further measures need to be undertaken, especially with the increasing number of tourists coming to the region.

E. TRANSPORT SECTOR

The transport sector plays an important role in supporting sustainable development by integrating transportation networks and facilitating the efficient movement of people and goods.[106] However, the transport sector is never environmentally neutral since all modes of transportation use fuel.[107] The sector's major impacts are related to air pollution, noise pollution and traffic accidents.

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[101] World Tourism Organization.
[102] UNEP et al., op. cit.
[103] ECES, 2000, as cited in UNEP et al., op. cit.
[104] Government of Morocco, Ministry of Tourism, 1999.
[105] KPMG, 1996, as cited in UNEP et al., op. cit.
[106] ESCWA, *Survey of Economic and Social Development in the ESCWA Region 2000-2001*, electronic draft, Transport Section, Ch. 5.
[107] ESCWA, *Review of Transport in ESCWA Member Countries*, Number 11, Document # E/ESCWA/TRANS/2000/1, English, New York: United Nations, 19 April 2000.

1. Vehicles and Roads

The number of registered motor vehicles in the region has steadily increased since the mid-1980s, doubling and even tripling in some countries.[108] There are approximately 20 million vehicles in all Arab countries serving 284 million; amounting to 74 vehicles/1000 people. The number of vehicles per capita in the Arab world varies considerably. This variation is related mostly to economy and urbanization, with the number of vehicles/1000 people ranging from 12 in Mauritania and Sudan to 31 in Algeria and to 408 in Kuwait. Also, the level of environmental impact is dependant on vehicle concentration, vehicle age and vehicle maintenance and inspection.[109]

Transport is a significant source of air pollution through the emission of gases, VOC, NO_x, SO_x and particulates, and for some pollutants, it is the main contributor. Vehicular transport accounts for 90 percent of total emissions of carbon monoxide (CO) in Arab countries, which emit an estimated 16 million tons/year of CO.[110] The motor vehicles emit 1.1 million tons/year of nitrogen oxides (NO_x), which represents 40 percent of total releases in the region (60 percent emanates from the energy and industrial sectors).[111] NO_x and SO_x contribute to acid deposition on soil, vegetation and water, as well as causing damage to crops, forests, and fisheries. NO_x are also the precursor of photochemical smog that is increasingly observed in urban centers throughout the region.[112]

Hydrocarbons (HC) result from incomplete fuel combustion or from evaporated unburned petrol from fuel tanks and carburetors; Arab countries emit 3 million tons/year of HC from vehicle emissions.[113] Benzene is the best-known hydrocarbon. Between 70 and 80 percent of total HC emissions originate from transport and play an important role in the formation of photochemical oxidants. Lead, used as an additive in petrol, still accounts for more than half of total lead atmospheric emission in the Arab countries and virtually 100 percent in urban areas.

The planning and maintenance of roads also influence the impact that the transport sector has on the regional environment, as does road safety. Traffic accident deaths are a leading cause of death among people in economically active age groups.[114]

2. Railways, Airport and Seaports

Trains generally provide an environmentally friendly alternative to trucking as a means of transporting people and goods. They also present economies of scale that have encouraged their expansion in a handful of countries in the region over the past decade. For political and economic considerations, regional railway network projects have also materialized. Accordingly, despite its limited usage, railways are still positive instruments for increasing transport efficiency and reducing the impact of the transport sector on the environment.

Regarding air transport, most countries of the region witnessed an increase in aircraft movement and the number of passengers and goods carried between 1995 and 1998.[115] While important for economic development, airport expansion projects have impacted neighboring populations, land resources as well as coastal areas. This has been particularly evident in terms of increased levels of air pollution,

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[108] Ibid.
[109] SOURCE.
[110] World Bank, 1994, Table 31 as cited in UNEP et al., op. cit.
[111] UNEP et al., op. cit.
[112] Ibid.
[113] World Bank, 1994 as cited in UNEP et al., op. cit.
[114] Ibid.
[115] ESCWA, *Survey of Economic and Social Development in the ESCWA Region 2000-2001* ... .

noise pollution, road development, and the problem of resettling communities located in the path of airport expansion projects.

The expansion of seaports and container shipping in the region since 1992 has facilitated trade efficiency, but has also had negative effects on the environment. For instance, as petroleum trade and transport increases in the region, so does the risk of oil spills and leaks into the Gulf. The Red Sea and the Mediterranean Sea – one of the world's main transit areas for petroleum transport – have also suffered loses to fisheries, tourism and marine eco-system health due to accidental spills, oily waste and dumping of ballast water from ships in regional seas.

F. URBANIZATION AND URBAN STRESS

Urbanization in the Arab Region is inevitable, as agricultural land becomes more limited, agricultural productivity increases, labor migration continues and population levels rise. The Arab Region is one of the most urbanized developing regions in the world with 69 percent of its population residing in urban centers.[116] Inadequate control over urban sprawl and its causes have generated urban stresses, which have adversely impacted transportation efficiency, housing, health, sanitation and socio-economic integration.[117] Urbanization generated by increased rural-urban migration and industrialization has also resulted in higher demand for food, increased consumption and production of industrial and municipal waste. It has also resulted in straining education resources, expansion of the informal housing sector and slums, as well as the loss of green spaces to infrastructure development.[118] Communities located in the peripheries of industries have expanded the informal housing sector and generated health concerns. It is estimated that 15 to 50 percent of city residents in the region are urban poor living in squatter settlements, illegal subdivisions, substandard inner-city housing, custom-built slums, and boarding houses.[119]

The continuous increase in population in large cities led to the formation of principal and mega-cities which have become one of the most important features of urbanization.[120] The expansion of urban areas onto agricultural land and the coastalization of urban movements have also become increasingly apparent in face of increasing urban density. These have the added dimension of linking the environmental manifestations of urbanization (air pollution, water pollution and sanitation) with coastal zone management and agricultural development. This has proved to be problematic given the continuing discharge of partially treated industrial and municipal wastewater from many urban and coastal cities into rivers and regional seas.[121] The urbanization of coastal areas has also led to the alteration of the coastline as well as the loss of nursing grounds for fisheries and marine life.[122]

The ability of urban authorities to provide public services and infrastructure essential for the health of urban communities and local citizens is facing difficulties. While housing and the delivery of water, sanitation and electricity services in primary urban centers improved significantly between 1980 and 1990,[123] the strain on public delivery systems increased during the 1990s with rising population pressures. This promoted many governments to slowly withdraw from some activities and open the door for privatization and the private provision of selected services. The role of secondary and tertiary cities has gradually been considered as alternative paths for urbanization. However, these centers need strengthening if they are to be able to provide productive employment opportunities and reduce migration to the most congested urban areas. Accordingly, inadequate and poorly articulated urban

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[116] UNEP et al., op. cit.
[117] Thematic RT Report.
[118] UNEP et al., op. cit.
[119] CEDARE, 1997, Hamza, 1995 as cited in UNEP, CEDARE, ACSAD, AGU, 2001. *State of the Environment in the Arab World*, draft.
[120] UNEP et al., op. cit.
[121] Thematic RT Report.
[122] Ibid.
[123] ESCWA, *Survey of Economic and Social Development in the ESCWA Region 1998-1999*. Document #: E/ESCWA/ED/1999/5. English. New York: United Nations, 2 April 1999.

management policies, instruments and strategies in most countries continue to exacerbate urbanization and urban environmental problems in the region,[124] albeit that gradual improvement is evident.

The rapid and massive urban growth and development have also given rise to significant environmental and health problems. Air pollution is becoming a serious health issue as a result of energy use, industries, transportation and burning of waste. Solid waste is also one of the key problems in most urban areas in the Arab countries. Meeting this urban challenge requires the concerted actions of governments at all levels, non-governmental organizations (NGOs), private enterprises, communities, and citizens. While there is introduction of urban management systems in many cities in the region, and there is improvement in solid waste management, the efforts and the allocated resources remain inadequate to address the growing problems of urban development.

G. PRODUCTION AND CONSUMPTION PATTERNS

There is an urgent need to alter production and consumption patterns in the region. Regional assessments and responses need to take into consideration the large variance that exists between states in the region. Furthermore, with few countries using fiscal measures, economic incentives and conventional environmental management tools to change unsustainable production and consumption,[125] much remains to be done. Special effort is needed to promote cleaner production in industry and other production sectors and harmonize environmental standards among Arab countries.[126]

1. Energy Consumption and Production

The energy consumption patterns in the region are unsustainable. As a resul - and despite its vital role to regional development – the energy sector in most countries has had significant adverse environmental impacts, particularly on air and water resources.[127] While demand remains high, on the supply side, there has been significant diversification of the energy resource mix over the past decade, with a remarkable increase in the use of natural gas (NG) in the electrical power and transport sectors. Many Arab Countries have switched to natural gas fired combined cycle power plants, which operate at low-cost and high efficiency with reduced environmental impact. The application of large-scale solar and wind technologies has started in some countries, which will likely further diversify the energy mix and reduce environmental impacts.[128]

Nevertheless, the slow pace of policy and institutional reforms in the region has prevented the creation of an enabling environment for public and private sector investment in the energy sector.[129] Financial and technological transfer and cooperation between Arab countries and industrialized states in the energy sector has also been limited and has not significantly increased since UNCED.[130] This is troublesome since the region requires the mobilization of large investments for domestic and foreign sources to meet current energy demand and anticipated growth in the sector.[131] The challenge will be whether the investment in new plants will be friendly to the environment, through the transfer of new technologies from developed countries, or will mean more obstacles to sustainable development.

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[124] UNCHS, 1994 as cited in UNEP et al., op. cit.
[125] Thematic RT Report.
[126] UNEP, CAMRE, ESCWA, 2001. *Regional Stakeholders Roundtable in Preparation for The World Summit on Sustainable Development WSSD*, 23-25 September 2001, Manama, Bahrain.
[127] EIS/ENRED/ESCWA Contribution to the Regional Assessment Report for Rio+10.
[128] Ibid.
[129] Thematic RT Report.
[130] Ibid.
[131] Ibid.

2. *Materials Production and Consumption*

As population levels increase and the regional economy expands, so does the supply and demand for consumer goods and industrial products. This affects the capacity of governments and municipalities to manage increased quantities of solid waste and effluent, and forces them to face new challenges related to hazardous waste management and medical waste. However, waste generation in the Arab Region varies considerably, with most countries generating on average between 180 and 300 kg per capita per year. However, estimated municipal waste generation in GCC countries is particularly high and has increased five-fold over the last 30 years.[132]

Furthermore, while informal recycling systems for paper, cardboard and scrap metal exist in some countries of the region (e.g., Egypt and Lebanon), limited awareness and incentives limit the formalization of recycling as a national policy. Ironically, while regional exporters in the agro-food sector are changing product and process standards to meet new packaging requirements in foreign markets (e.g. the EU Packaging Directive and United States Packaging Regulations), changes are usually not applied to products sold in Arab markets leaving Arab consumers to chose among lower quality outputs.[133] Encouraging consumer protection societies and the standardization of environmental health regulations across the region could remedy this skewed market response.[134] Decentralization and privatization of solid waste management services and national guidance on reducing and recycling waste could also be avenues to limit materials production and consumption.

[132] UNEP et al., op. cit.
[133] See ESCWA, *Trade and Environment in the ESCWA Region: Selected Issues*, forthcoming from TIE/EDIPD, 2001.
[134] Regional Stakeholders Roundtable in Preparation for The World Summit on Sustainable Development WSSD, 23-25 September 2001, Manama, Bahrain.

IV. ENVIRONMENTAL TRENDS, RESPONSES AND ACHIEVEMENTS

A. MANAGING NATURAL RESOURCES

1. *Fresh Water Resources*

a. Priority Issues and Status of Freshwater Resources in the Arab Region

The Arab Region is dominated by hyper arid, arid to semi arid climatic conditions, high evaporation rates, limited precipitation and limited river flow. The three major rivers, representing 55% of the water resources originate from outside the region. There is a clear imbalance between available water resources and water demands in almost all countries of the region, and sustainable development of freshwater resources is the top priority concern in the Arab Region.

The accumulative Actual Renewable Water Resources (ARWR), which includes both internally generated freshwater and water resources from external origins is estimated at 229 km^3/year for the Arab African countries. The Asian Arab countries possess a total of 112.8 km^3/year of ARWR. In 1950, the average annual share per inhabitant of ARWR exceeded 4000 m^3/cap/year for the Arab Region. This share decreased dramatically to 1,312 m^3/cap/year in 1995, 1,233 m^3/cap/year in 1998 (compared to 5,500m^3 in Africa, 3,500 m^3 for Asia and 7,700 m^3 for the globe[135]), and is projected to drop to 547 m^3/cap/year by year 2050. Different sub-regions and nations experience tremendous deviation around the average. Kuwait, for example, has a share of 11 m^3/cap/year of renewable water resources, while Mauritania enjoins a share, which exceeds 4,500 m^3/cap/year.[136]

The main driving forces for water problems in the region are the burgeoning population, the accelerated development and competition for water in the urban, industrial and agricultural sectors, ineffective water management policies and practices, erratic precipitation and the highly volatile regional peace and security situation. The growing water claims of upstream riparian countries of shared water resources has resulted in further reducing the share of the downstream Arab countries, especially in Syria and Iraq.

Groundwater resources play a major role in satisfying the growing water demand in the region.[137] Fossil water resources can satisfy about 15 percent of water demand in the region. In general, easily accessible groundwater resources in the region are over-exploited which risks further damage to underground water reserves through intrusion of seawater or the seepage of pollutants.[138] Deep fossil groundwater basins on the other hand hold good potential for groundwater reserves that are not adequately explored and utilized because of the high investment cost.[139]

Renewable groundwater resources are in the form of shallow alluvial aquifers recharged from the main rivers in the region or directly from precipitation in limited coastal areas. The Nubian Sand Stone Aquifer, a non-rechargeable basin in the Sahara Desert shared by four nations (Egypt, Libya, Sudan and Chad), has an area of 2,350 km^2, and possesses a maximum reservoir capacity of 150,000 km^3.[140]

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[135] League of Arab States, op. cit.

[136] FAO (Food and Agriculture Organization of the UN) 1995. "Irrigation in Africa in Figures", Water Report 7; FAO (Food and Agriculture Organization of the UN) 1997. "Irrigation in the Near East Region in Figures", Water Report 9.

[137] UNEP et al., op. cit.

[138] The World Bank Group *From Scarcity to Security – Averting a Water Crisis in the Middle East and North Africa.* Internet: http://www.worldbank.org/html/extdr/offrep/mena/Focus/BOOKLET.ARA.html.

[139] World Water Council, 2000. Arab Countries Vision Consultations. Internet: http://www.worldwatercouncil.org/Vision/Documents/ArabCountriesVision.PDF.

[140] CEDARE (2001) Center for Environment and Development Programme for the Development of Regional Strategy for the utilization of the Nubian Sandstone Aquifer System.

About 20 different aquifer systems exist throughout the Asian Arab countries, with an estimated reserve of 143.8 km^3.[141] At present, groundwater resources in the Arab Region, in general, and in the Arabian Peninsula in particular, are in a critical condition as the volumes withdrawn far exceed their natural recharge resulting in a continuous decline in groundwater levels and quality deterioration in most of the countries due to seawater and connate waters encroachment.

Several Arab countries use non-conventional water sources to meet their increasing water demands. These include desalination and reuse of treated municipal wastewater. However, the extent of use is still limited. In the Arabian Peninsula (GCC countries), out of the almost 1 km^3 of treated wastewater per annum, only about 0.4 km^3 are being tertiary-treated and used for irrigating non-edible and fodder crops as well as for landscaping. About 60 percent of the partially treated wastewater is dumped into the sea or in low lands, whereas in the Mashreq countries, about 0.2 km^3 of treated wastewater are used annually for irrigation purposes. Desalination plants in the GCC countries (47 in operation) have a combined capacity of 1.6 km^3/year, accounting for 60 percent of total world capacity, and covers about 50 percent of the domestic water supply. Desalination plant capacity is expected to reach 3 km^3/year by the year 2020. However, these plants have environmental impacts in terms of the disposal of the heated brine containing halogenated residuals and corrosion products.[142]

At the current demand pattern, about 89 percent of the water use is directed to irrigation, 6 percent for household, and 5 percent for industry. It is expected that the water supply for household, industry and commercial purposes will not be severely affected in the future and would be met even under severe water crisis, as it only represents 11 percent of the total demand uses. Thus, the core of water demand has been the agriculture sector, especially in view of the fact that most countries of the region adopted food self-sufficiency or food security policies that were unsustainable in terms of water resources. It is in this sector where most water strategies are being focused at the present time.

Water quality has also become a major issue of concern in the Arab Region. Water pollution, mainly with sewage pathogens, industrial wastes and agricultural effluents represent a serious threat to human health and further aggravate water scarcity by reducing clean water availability.

Major water quality problems in the Maghreb countries include; high salinity of non-perennial rivers, high total suspended solids in rivers during the peak flows, excessive total bed load (erosion rates of 1,000 t/km^2/year, which contribute to siltation of reservoirs), and high fluoride content in localized groundwater sites. Human induced pollution includes pathogenic pollution of water resources as a result of untreated municipal wastewater effluents. Nitrate pollution of groundwater from fertilizers is recorded in several countries. Dams contribute to the raising of the water table, thus stimulating water logging and increased groundwater and soil salinity. Cadmium-rich water releases from phosphate mines and eutrophication of dam reservoirs are also common problems.[143]

In the Mashreq sub-region, dumping of raw and partially treated wastewater from agriculture, industry and municipalities in water courses has caused deep concern over the health impacts, and has subjected agricultural lands and water resources to severe pollution, especially during low discharge periods. Contamination of the underlying shallow aquifers with nitrates is also evident in many areas, thus causing serious health hazards. River basins in the countries of this sub-region have shown water pollution symptoms similar to those of the Maghreb countries.[144]

Over the last few decades, efforts of the water authorities in the region in managing water resources were concentrated on supply augmentation and, to a lesser extent, on demand management and

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[141] UNEP et al., op. cit.

[142] Al-Zubari, W.K. (1997). Towards the Establishment of a Total Water Cycle Management and Re-Use Programme in the GCC Countries. 7th Regional Meeting of Arab IHP Committees, 8-12 September 1997, Rabat, Morocco.

[143] UNEP et al., op. cit.

[144] Hamad, I.G. Abdelgawad and F. Fares. 1997. Barada River Water Quality and its use in Irrigated Agriculture (Case Study). UNEP-ROWA/AGU Regional Workshop on the Technologies of Wastewater Treatment and Reuse. Bahrain 2-4 June 1997.

conservation. Recently, programmes related to demand management, conservation, and protection have been introduced in the region.

b. Achievements in Sustainable Water Development

Over the last two decades, the Arab countries have strived to consolidate their efforts to meet the water crisis, and have conceived a Common Arab Water vision for appropriate water resources development and management to the year 2025.[145] Investment in desalination and wastewater treatment has been recognized as necessary. Controlling water pollution has also become a general policy trend in the region.

There have been noticeable improvements in water policies and water related governance issues, reflected in better coordination and integration of efforts between the various institutions and stakeholders, however the situation remains far from ideal. Many countries in the region have prepared freshwater national master plans, and developed more appropriate agriculture policies. Furthermore some measures have been introduced to improve water usage, such as water use restrictions, cost recovery, and reduction or removal of subsidies. Demand management approaches have been recently introduced, yet are still rather limited to bear tangible fruit and to reflect on the overall water situation in the region. The notable experience of the Arab Mediterranean countries through UNEP/MAP Mediterranean Commission on Sustainable Development (MCSD) has shown that available unused or misused water resources represent about 50 per cent of the total current demand for the Mediterranean Region as a whole, proving how crucial is the efficient management of water demand.

Water resources management is increasingly entrusted to appropriate authorities and stakeholders, with increasing partnership with the public and the private sectors.[146] Public awareness of water issues has also been raised in the region and has stimulated a common concern over the water resources, and created a sense of common responsibility. Of the other positive developments in the water sector is the increasing use of advanced and appropriate approaches and methodologies for water resources assessment and planning. There is also more investment in water resources management, such as investment in more efficient irrigation technologies.

c. Constraints and Challenges for Sustainable Water Development in the Arab Region

The major constraint and challenge for the region is that the water supplies are limited and variable in quality due to natural causes (drought conditions) and/or flow of shared rivers due to upstream abstraction and use. The gap between available water resource supplies and future demand is continuously exacerbating due to fast growing population, and the attitude and patterns of water provision and consumption, which are not in harmony with the region's limited water resources. The region receives only 0.5 percent of the global precipitation, 80 percent of which is being lost by evaporation.[147] Moreover, nearly 55 percent of the region's surface water resources originate outside the region (high water dependency). There is concern over shared water resources in the Arab Region. Therefore, there is a need for UN support to the Arab countries in the management of shared water resources.

In most countries, there remains a number of institutional and policy constraints that hinder the sustainable development of water resources including the lack of comprehensive strategy and policy for water resources, inadequate and fragmented institutional framework, inadequacy of water allocation and planning, insufficient efforts for exploration and inadequacy of assessment, limited availability and weak access to data, insufficient monitoring systems and networks for data collection, insufficient funds and shortage of skilled personnel. The legislative framework also imposes some

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[145] World Water Council, 2000. Arab Countries Vision Consultations.
Internet: http://www.worldwatercouncil.org/Vision/Documents/ArabCountriesVision.PDF.
[146] Thematic Roundtable 2001
[147] League of Arab States, op. cit.

major constraints. Most of the prevailing legislation, rules and regulations have become outdated and irrelevant to control, protect, and sustain all aspects of the water sector. The situation is further complicated by the lack of political will and inadequate capacity to enforce issued water legislation.

The control of pollution of freshwater resources is challenging as they are so diverse. There are also constraints regarding the reuse of agriculture drainage, sanitary and industrial wastewaters due to the quality and the size of the drain water, the inadequate introduction or adoption of appropriate technology, cost, and energy use-efficiencies. It is also noted that desalination techniques are faced by a number of constraints, such as elevated cost, use of non-renewable energy sources, lack of sufficient resources and investment, trained man power, etc.

The Israeli occupation of Palestinian and other Arab territories and the lack of water and wastewater treatment facilities in the occupied territories, as well as the continued conflict in the Middle East, are major obstacles for the sustainable development of water resources in this part of the Arab Region.

2. *Marine and Coastal Zones*

Coastal and marine resources are critical resources for the livelihood of the people of the Arab Region, whose history and culture have been linked to the sea for thousands of years. Over 60 percent of the population of the region is concentrated in coastal areas, extending for over 18,000 km. Many of the region's coastal areas are, however, under increasing pressure from growing human activities. The main driving forces for these pressures include the growing population associated with rapid urbanization and human settlements along the coast, industrial growth, oil exploration, production and export and the associated tanker traffic, fishing, tourism, agriculture, aquaculture and sea water desalination.

The major threats to marine and coastal environments in the region include physical alteration and destruction of habitats; pollution from sewage, solid wastes, industrial effluents, oil spills, contamination from agriculture discharges, destruction from tourism and recreation activities and resource depletion in the form of over-fishing and introduction of alien species. Both the Mediterranean and the Gulf have exhibited symptoms of eutrophication over the past few years in the form of algal blooms and fish kills.

The region's coastal and marine environment is best treated from the geographic context of the main three regional semi enclosed seas: the Mediterranean, the Red Sea and Gulf of Aden, and the ROPME Sea Area (RSA).[148]

In all three regional seas, marine fishing represents a major industry. The total fish landings have increased from 1.3 million metric tons in 1990 to 1.7 million metric tons in 1997.[149] This corresponds to a 26 percent increase for this period. However, the ratio varied for different sub-regions of the area as it ranged from 12 percent for the Gulf to 41 percent for the Red Sea.[150] Moreover, this increase is often associated with a significant increase in fishing effort, indicating over-fishing in these areas.

a. <u>The Red Sea and Gulf of Aden</u>

The Red Sea is one of the world's most important repositories of marine biodiversity. It is considered as one of the least ecologically disturbed seas relative to other semi-enclosed seas. Until two decades ago, the Red Sea was mostly a pristine area sparsely populated with few ports and towns, and very limited land- or sea-based activities. Coral reefs are widely spread and well developed in the Red Sea,

[148] RSA is the name used to describe the Gulf, the Gulf of Oman and parts of the Arabian Sea as indicated in the Kuwait Convention (1978), according to which the Regional Organization for the Protection of the Marine Environment (ROPME) was established.
[149] FAO 1998. FAOSTAT Online database. Internet:http:/www.fao.org/waicent/faostat.
[150] UNEP et al., op. cit.

and there are at least 450 coral reef-associated species.[151] Some of these species are used as indicators of the condition of the reef system. The few marine protected areas in the Red Sea and Gulf of Eden represent a major haven to migratory birds in the region and a general reserve for species in the area. However, there is a growing risk of pollution and environmental degradation of the coastal and marine environments from the rapidly expanding maritime industry, tourism, recreation, and oil exploration activities, thus endangering the coastal and marine habitats and their rich biodiversity.

Physical alteration and destruction of habitats, by activities such as dredging, land filling, mining, quarrying are major threats to most countries of the Red Sea.[152] Sedimentation from these operations results in the suffocation of the benthic communities and has an adverse effect on the surrounding ecosystems; mangroves, sea grass beds and coral reefs. This, as a consequence, leads to a decline in the productivity of shrimping grounds and other demersal fisheries. In addition, uncontrolled tourist activities, such as damage to corals by anchors, movement of tourist boats, coral breakage by divers, and pollution from littering and wastewater discharges from coastal resorts and passing tankers and other ships, have resulted in significant damage and destruction of key habitats.

The rapid urbanization associated with tourism and oil industry development, witnessed in Egypt, Jordan and Saudi Arabia -threatening the fragile ecosystems of coral reefs and marine environments- have promoted the initiative to establish the Regional Organization for the Conservation of the Environment in the Red Sea and Gulf of Aden – PERSGA (1982). Assessment of land based sources of pollution by PERSGA have indicated that the Red Sea is also at high risk from sea-based pollution, including oily wastes marine pollution related to the production and transportation of oil.[153] Over 100 million tons of oil are transported through the Red Sea annually. Marine transport is also at risk from navigational hazards, especially the entrance at the Gulf of Aden.[154] The Red Sea has unregulated maritime traffic and insufficient maintenance of navigational aids around narrow passages that have created high-risk zones. Offshore oil leaks and spills from the oil industry are another threat to coastal and marine resources in the Northern Red Sea and Gulf of Suez area. Untreated and poorly treated water discharges (mainly sewage) and solid waste are considered as major environmental threats throughout the region and are reported from various countries of the Red Sea.

Agricultural activities causing pollution in the Red Sea were reported for the Gulf of Suez in Egypt and from Sudan, Yemen and Somalia. Agricultural run-off carries residues of pesticides, insecticides, herbicides, and fertilizers.

b. The Mediterranean

The Mediterranean is one of the richest cultural regions of the world and is also one of the most environmentally threatened semi-enclosed seas due to the long and complex human impact through its long history.

Population growth and distribution are major driving forces impacting the region. Over the last decade, the coastal population has grown steadily. About 40-50 percent of the population in the Mediterranean Arab countries lives on the coast.[155] To meet increasing demand for land, wetlands adjacent to the

[151] Randall, J. E., 1983. Red Sea Fishes, IMMEL Publ., London.
[152] UNEP/PERSGA 1997; and UNEP et al., op. cit.
[153] UNEP/PERSGA 1997. Assessment of land-based sources and activities affecting the marine environment in the Red Sea and Gulf of Aden. UNEP Regional Seas Reports and Studies No.166.
[154] World Bank, 1996. The Experience of the World Bank in the Legal, Institutional and Financial Aspects of Regional Environment Programmes: Potential Applications of Lessons Learned for the ROPME and PERSGA Programmes. Washington D.C.
[155] UNEP/MAP, 1996. The State of the Marine and Coastal Environment in the Mediterranean Region. MAP Technical Reports Series No. 100.

coast were reclaimed and converted to agricultural uses. These lands were exploited intensively to produce agricultural crops. The heavy use of fertilizers, pesticides, and herbicides caused non-point source water pollution problems in many countries of the region. Fertilizer consumption is reported to range between 25,000 and 990,000 tons/year for the Mediterranean Arab countries.[156]

Since UNCED, urbanization along the Arab Mediterranean countries has accelerated in support of the growing population, tourism and recreation. Tourism contributes significantly to the GDP in Tunisia, Egypt and Morocco. The tourist industry is in the rise in these and other countries and is bound to increase pressure on the coastal resources.

Land based pollution is relatively high in the Mediterranean compared to the other regional seas. For example, the organic load of domestic sewage discharged into the coastal water of the Eastern Mediterranean directly or through rivers is estimated to be 6,500 and 31, 250 ton/year (BOD) for Syria and Lebanon respectively.[157]

Through the implementation of the Blue Plan, initiated by the Mediterranean Action Plan – MAP (1972), land and sea-based sources are being addressed. MAP has also encouraged the establishment of protected areas in the region. There are 19 protected areas, five of which are in marine areas, with proposals for much wider network of protected areas all along the coast.

c. The Gulf Area

This region, perhaps more than other regional seas, has witnessed unprecedented development and population growth, which has resulted in accelerated demand of coastal areas and marine resources. Marine pollution, destruction of habitats and over-fishing represent a major challenge that the Regional Organisation for the Protection of the Marine Environment (ROPME) has had to face since its inception.

In its assessment of land-based activities in the area, ROPME has identified sewage, oil pollution, and physical alteration of habitats, industrial effluents, solid waste and litter dumping as the major sources of pollution in the area. The increased input of nutrients, organic matters and industrial effluents into the warm and oxygen deficient waters in summer has led to eutrophication, especially in embayments such as the Kuwait Bay, encouraging algal blooms and fish kills.

Through the development of regional protocols addressing marine emergency procedures to protect the marine environment from oil pollution, exploration and exploitation of the continental shelf, the control of transboundary movements of hazardous wastes and prevention of marine pollution from land-based sources, the pollution of the marine environment is being addressed. ROPME member states have been able to reduce the impacts of anthropogenic activities on the marine environment; however, the state of the marine environment is still far from being restored. The recent fish kill in Kuwait Bay is a reminder that the area is experiencing eutrophication in the estuaries and enclosed embayments.

ROPME's efforts to establish a regional network of reception facilities for oily wastes and other wastes is promising to reduce oil pollution levels that currently stand at over 1 million barrel/year as chronic releases from shipping activities.

The adoption of a regional plan of action to implement the Global Programme of Action for the Protection of the Marine Environment from land-based activities (GPA) is another step towards improving the state of the marine environment.

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[156] UNEP/MAP 1996. The State of the Marine and Coastal Environment in the Mediterranean Region. MAP Technical Reports Series No. 100.

[157] UNEP et al., op. cit.

d. Achievements

In spite of the extensive deterioration in the health of the marine ecosystem in the Gulf and in the Mediterranean, there has been better awareness, improvement in mitigating pollution from land based sources, increase in number of reception facilities for oily waste water and other wastes, and the application of some economic instruments such as the implementation of polluter pays principle. Major steps have been made in capacity building, improving use of information technology, the initiation of monitoring control and surveillance systems and the development of aquaculture. Policies and action plans have been developed to reduce navigational risks and improve management of coastal and marine habitats and ecosystems, including coral reefs. Contingency plans to combat oil pollution have been prepared in several countries. Protocols on protection of biodiversity and establishment of protected areas have also been initiated, including in the ROPME and PERSGA Regions.

Over the past decade, there has been significant progress in promoting integrated coastal zone management approaches in most of the countries of the region, and notably in all Arab Mediterranean countries through Coastal Area Management Programmes (CAMP) in the framework of UNEP/MAP. Progress has also been made towards the establishment of reception facilities for oily waste and other wastes, and the implementation and enforcement of MARPOL 73/78, especially in the Gulf area, where a ROPME-led feasibility study on the establishment of a regional network of such facilities has been prepared.

There has also been progress towards the protection of living marine resources and sustainable management of fisheries. National and regional policy measures have been taken to reduce over fishing, including restrictions on fishing seasons, banning the sale of certain species, regulating fishing gear and restricting fishing areas.

Countries of the region are all taking parts in major action plans organized in three regional seas; the Mediterranean, Kuwait and Red Sea & Gulf of Aden Action Plans.

e. Constraints

There is increasing pressure on the coastal and marine environment from urban expansion without proper land use planning, increased dredging and land reclamation, growing tourism, and competition for resources utilization, and inadequate measures to combat land and sea based pollution. The situation is exacerbated by the inadequate awareness of marine and coastal habitats, and their ecosystems, and inadequate legislation on sustainable coastal and marine habitats and resources, including the legislation on the management of transboundary and straddling stocks.

The sustainable use of coastal and marine resources is hindered by the over exploitation of some valuable marine species, the destruction of sensitive habitats (e.g. wetlands, turtle nesting grounds, coral reefs and oyster beds) and inadequate financial support to sustainable management of coastal and marine ecosystems.

The slow development of regional action aiming at increasing surveillance of shipping, controlling illegal fishing and pollution from offshore explorations has hindered the implementation of regionally developed action plans. Lack of sustainable financial commitment to regional organizations hinders long-term planning for implementing effective marine and coastal integrated management schemes. Moreover, most member states have not been able to fully integrate regional and global MEAs into their national legislation and policies and to develop enforcement and liability procedures towards their implementation.

Of the key constraints are also the lack of suitable regular and continuous observations of different variables and biological phenomenon (invasive alien species), the limited access to data and information and the weakness of community-based approaches for integrated coastal zone management.

The region is often subjected to regional wars and armed conflicts of various scales. These conflicts are inflicting serious damage to the marine and coastal environment particularly in the form of massive oil spills and disposal of large amounts of debris and hazardous wastes.

3. Land Resources

a. Status of Land Resources

Impact of environmental pressures of human activities, deterioration of water resources, climate fluctuations and climate change are raising serious concern on the sustainable management of the scarce land resources in the region. Land degradation and food security are major issues of concern. The Arab Region's land resources are quite limited. The total land area of the region amounts to about 1,402 million ha, of which only 197 million ha (14 percent) are arable land. The cultivated land is estimated at 71 million ha in 1999, representing about 5 percent of the total land area and 36 percent of the arable land in the region.[158] Most of the undeveloped arable lands are located in Sudan. The other main land use categories, rangelands and forest areas represent 25 and 3.9 percent respectively. There are significant disparities in the distribution of land resources among the countries of the region. Sudan alone accounts for 53 percent of the total arable land (105 million ha), and 82.7 percent of the forest areas, while Saudi Arabia accounts for 49 percent of the rangeland in the region.[159]

Degradation of land resources, a global phenomenon, has become a prominent environmental issue in the region. Desertification, as the advanced form of land degradation, is the most common concern and is threatening most countries. For example, Algeria, Egypt, Libya, Morocco, Mauritania and Tunisia, which border the Sahara Desert, have lost an estimated 65 million ha of fertile land during the last 50 years.[160] Human induced land degradation in West Asia has been greater than the world average, estimated at 15 percent on average, with rates reaching 53 percent in Iraq and 40 percent in Jordan. The main pressures causing degradation processes are increasing population, urbanization and development of human settlements, climatic stresses and drought, overgrazing, deforestation, forest fires, poor agricultural practices, cultivation of marginal lands, unfavorable land tenure, trade policies, and inappropriate farming systems including intensive use of agricultural chemicals and farm inputs to maximize yield.

The impacts of environmental pressures on land resources include destruction of rangelands natural flora and loss of biodiversity, loss of soil fertility, destruction of forestation areas, pollution of scarce land and water resource base, soil salinity and water logging, increased poverty and huge foregone economic returns, adverse social impacts and rural-urban migration trends.

Agriculture is a pivotal sector in many countries of the region. It plays a key role in countries policies for food self-sufficiency and food security with significant contribution to national economies. The average contribution of the agricultural sector to GDP of the region stood between 12-13 percent during the 1990s. Agriculture also plays a social role as it provides 30 million people with employment opportunities. In addition, it contributes to the export sector and the manufacturing industries.[161] From 1990 to 1999 alone, the cultivated areas increased from 57.6 million ha to 71

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[158] AOAD. 1998.Arab Agricultural Statistics Yearbook, Khartoum, Sudan; League of Arab States, op. cit.
[159] UNEP et al., op. cit.
[160] FAO 1993. Follow up of the UNCED: Integrating Environment and Sustainability into Agricultural Policy Analysis. FAO(ESPC/N/93/5). Rome.
[161] League of Arab States, op. cit.

million ha.[162] The agricultural sector is, however, the major water consumer in the region (89 percent) thus is placing exceeding pressure on the already scarce water resources.

Over the last three decades, the countries of the region adopted policies geared towards increased agricultural production to meet the ever-increasing demands of the fast growing population. These policies were based on the expansion of cultivated lands, adoption of intensive production systems, extensive use of agricultural machinery and heavy application of inputs including fertilizers and agricultural chemicals. The horizontal expansion was led by the public sector with heavy subsidies, controlled pricing and marketing of the produced commodities. National policies for food security necessitated the application of large-scale agricultural protectionism, subsidized pricing for agricultural inputs and products and imposition of trade barriers. Heavily subsidized agrochemicals along with free or low price irrigation water, severely affected water and land resources and contributed to unsustainable patterns of agricultural production. [163]

The sector faces several environmental problems such as unsustainable use of irrigation water and poor management practices, which have led to salinization, water logging, alkalization and nutrient depletion in large areas of the region. Further, excessive use of nitrogenous fertilizers enhances the concentration of nitrates in the local groundwater aquifers, and in drain water thus restricting its use. The increasing demand for food in the region has led to the introduction of agricultural systems into marginal fragile lands.[164]

Present status of self-sufficiency of food commodities varies considerably on a regional basis. The food gap varies from one year to the other but was estimated at 13 billion U.S. Dollars in 1998. In spite the continuous increase of food and agriculture production, the gap seems to widen because of the increasing population and the growing demand for food.

b. Achievements of the Region in Sustainable Land Resources Development

Since UNCED 1992, the Arab countries have accumulated better knowledge and understanding of their land resources and agricultural practices and understood their linkages with the environment. This advancement is directly attributed to the use of modern information technologies and decision-making tools, and greater participation of stakeholders through farmers and users associations. Gender issues are also receiving greater attention. As a result, most countries of the region have developed and enacted water and land use legislation with various, but generally modest, degrees of success due to poor implementation and enforcement.

Research efforts to enhance sustainable development are encouraged, including the introduction and use of modern techniques to assess and mitigate desertification. The countries of the region are carrying out varied activities to assess and monitor the land degradation processes in order to combat the various adverse impacts of degradation.

Some countries in the region have adopted improved production technologies, which resulted in more food (mostly cereal) production, while others have not benefited equally in respect of technology adoption and food increases.

Most countries of the region have joined the United Nations Convention to Combat Desertification (UNCCD). As such, many countries in the region have undertaken the preparation and implementation of national and regional action programmes to combat desertification. However, implementation remains limited to individual projects. Emphasis on regional cooperation in combating desertification is best exampled by the agreement to implement the Sub-Regional Action Programme (SRAP) of the

[162] League of Arab States, op. cit.
[163] UNEP et al., op. cit.; UNEP 2002, Global Environment Outlook-3 Draft

UNCCD in cooperation with the Global Mechanism (GM), the Arab Centre for the Study of the Arid Zone and Drylands (ACSAD), the International Centre for Agricultural Research in the Dry Areas (ICARDA), the United Nations Office to Combat Desertification and Drought (UNSO), UNEP and CAMRE.

Governments are also taking more proactive actions in limiting the use of hazardous agricultural chemicals in the region. For instance, several countries now participate in the Rotterdam Convention and most chemicals require government prior informed consent for import. Furthermore, some countries are considering policies regarding the use of genetically modified organisms (GMOs) on the basis of environmental and health concerns.

To enhance the sustainable development of the resource base, many of the concerned governments have adopted liberalization and structural reform policies of marketing, pricing and trade of produced food and agricultural commodities with removal or minimizing subsidies for inputs. Policies have been adopted to enhance exports and foreign trade. Further, measures have been adopted to encourage inter-regional trade through bilateral trade agreements and the enhancement and establishment of Arab Free Trade Areas.

c. Constraints and Challenges

In addition to the natural constraints associated with the aridity of the region, the main constraints for the sustainable use of land resources include the lack of comprehensive national and regional strategies and implementation means to address land degradation and food security, scarcity of water and land resources, lack of land use planning, increased population associated with decreased per capita area of cultivated lands, arable lands and share of food. There are also limited financial resources and insufficient investment in land resources. Other constraints leading to increased land deterioration and cultivation of marginal lands include water use inefficiencies and decrease of water supply, deteriorating water quality and lack of appropriate technologies. In addition, while the institutional set-up is improving, it has been slow and coordination among institutions and with stakeholders is still not strong enough.

Many agricultural producers in the region are facing increasing competition with the reduction of trade barriers, enforcement of environmental standards, decline of support services and loss of subsidies owing to structural adjustment and imposed economic reform policies. A unified regional approach to address the implication of the WTO agreements on agricultural exports is yet to be developed.

4. Mountains and Forests

a. Priority Issues and Status of Mountains and Forest Resources in the Arab Region

Mountains in the Arab Region are found on South East, North West and North East areas. They serve as vast reserves of valuable resources – such as water, energy and biological diversity – as well as key centers of culture and recreation. Forests also fulfill important environmental functions such as land stabilization, erosion control and regulation of hydrologic flow.

The total forest area in the Arab Region is estimated at 50,344 thousand ha,[165] about 3.7 percent of the total land area of the Arab Region, and only one percent of the world forests. Over the past 100 years, forest areas were reduced as the rate of deforestation increased significantly. Available statistics indicate that the area of forests in the region was reduced by 7.3 million hectares during the period 1971-1988(5.6 percent of the total forest area), at an annual rate of 430 thousand hectares.[166] Between

[165] FAO (1999). State of the World's Forests. FAO, Rome.
[166] CAMRE /UNEP/ ACSAD. 1996. State of Desertification In the Arab Region and the Ways and means to deal with it

1990 and 1995, the forests of the region were reduced at an annual rate of 1.6 percent.[167] This high deforestation rate is due to the extensive land clearing for human settlements, agricultural activities, livestock grazing, over collection of fuel wood and charcoal production, urban sprawl, frequent natural and man-made fires and drought. In the last fifteen years, tourism is increasingly becoming a new phenomenon in degradation of mountains ecosystems and forest areas.

It is estimated that 44,000 ha / year of forests are lost to fire. In some countries, deforestation due to manufacturing of charcoal has increased 8-10 times more than the forest's production capacity. Other factors contributing to the disintegration of the forest wealth include ambiguity of ownership, lack of technical personnel, agricultural extension services, and lack of financial resources and development techniques. Another major pressure on some of the forests in the region is the increasing demand for *Arabic Gum*.[168] The reduction of forest has resulted in a reduced influence on regulating water and maintaining soil in their place.

Forest productivity in the region is rather low, ranging from 0.02-0.5 m^3/ha/y with the exception of forests of the coastal mountains of Lebanon and Syria. All countries in the region are deficient in wood production and depend on imports to satisfy their local needs.[169] It is also noted that in most countries of the region, forestry's share of Gross Domestic Product (GDP) is rather low. Only for Sudan, the contribution to GDP is significant, reaching up to 13 percent.[170]

b. Achievement in Mountains and Forest Sustainable Development

Concerns of the countries about forest deterioration have been reflected in sustainable afforestation and reforestation programmes launched in the region, various measures have been taken recently to protect and increase forest areas. Forestlands are being demarcated in some countries. Forest reserves have been declared in Jordan, Lebanon, Saudi Arabia, Oman, Yemen, Syria, Tunisia, Algeria, Sudan and Morocco as a result of mounting awareness and interest in conservation. Managing forests on sustainable basis is currently underway in the region. In general, forest plantation has been carried out for various purposes such as sand dune fixation, rehabilitation of degraded steppe areas, range rehabilitation and improvement, watershed management, and protection of agricultural areas and in most the use of treated waste water. Forest plantation efforts however have not been able to keep up with the loss of natural forests.

c. Constraints and Challenges

The main challenges and constraints that stand in the way of achieving sustainable forest and mountain management are the weaknesses of institutions and enforcement of legislations, land tenure practices, the climatic and water limitations, lack of technical personnel and agricultural extension services, lack of financial resources and development techniques, poor forest management, the underlying international market and policy failures of forest resource pricing, and trade policies.

5. Biodiversity

a. Priority Issues and Status of Biodiversity

The tradition of biodiversity conservation is not new to the Arab culture. This is witnessed by the "*Hema*" protection system of rangelands, strictly applied in the Arabian Peninsula and North Africa before and after Islam. The forest reserves "Harags" in Mediaeval Egypt and the oases of Morocco and

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[167] FAO (1999). State of the World's Forests. FAO, Rome.
[168] CAMRE /UNEP/ ACSAD. 1996. State of Desertification In the Arab Region and the Ways and means to deal with it ACSAD Publications (Arabic).
UNEP et al., op. cit.
[169] FAO (1996). Forestry Policies of Selected Countries in Africa. FAO, Rome.
[170] FAO (1999). State of the World's Forests. FAO, Rome.

Andalusia represent another form of conservation. The ancient Oriental and Greco-Roman religions took it for granted, that animals and plants, and other natural objects can have spiritual significance just like human beings and therefore deserve respect. In Islam, porcousevations leasaus hunting is prohibited during certain months of the year "Al-Ash-hur Al-Hurum."[171]

The unique and highly vulnerable biodiversity of the Arab Region is at serious risk from increased human activities. The main environmental issues of concern over biodiversity in the Arab Region are the degradation and/or destruction of habitats and the loss of species. Since UNCED, the commitment of the region to the protection of biodiversity has increased, however conservation and protection measures have not yet been adequate to stop and reverse the destruction of habitat and loss of biodiversity. Although most of the region falls within arid and semi-arid environments, the contrasting geomorphology and sub climatic zones have created diverse ecosystems, which are inhabited by numerous species of flora and fauna.

In spite of being limited in terms of species richness, biodiversity in the Arab Region has exceptional value when considering the variability of ecological, chemical and genetic characters of the species "intraspecific diversity" which provides a wealthy stock of biological resources that can be utilized through biotechnology techniques to serve agricultural, medicinal and industrial purposes.[172] The region is the original habitat of wild relatives of several food and fodder crop plants. Wild plants in the region are of exceptional value, nearly 70 percent have potential uses, 35 percent of which are "multipurpose" as sources of traditional food, forage for livestock, medicine and pharmaceuticals and agroforestry.[173]

Biodiversity of the region is threatened by increased human activities. The expected percentage loss of the existing species in the next two decades attains the highest value of 34 percent in plants of Jordan, and about 23 and 24 percent in mammals of Kuwait and Mauritania, respectively. Expected species loss in birds is about 23 percent in Comoros, 11.25 percent in Libya and 10.20 percent in Mauritania. As for reptiles, the expected loss reaches 6.90 percent and 6.25 percent in Kuwait and Oman, respectively.[174]

The underlying threats of biodiversity in the region include population growth, agricultural and urban expansion into ecologically important areas, poverty and unsustainable use of biota, industrial pollution, and macro-scale stress such as drought. Mismanagement of rangelands, over-grazing, over-fishing, hunting and hostilities have generated additional pressures. Among the emerging factors threatening biodiversity in the region is the biological invasion of exotic and genetically modified species, which may result in an increasing homogenization of the biota. The depletion of underground water levels in many countries has also led to the deterioration and loss of unique water springs and wetlands with their associated biota. The growing influence of safari sports, combined with the oil wealth in the 20th century, and the violation of traditional norms and values, have destroyed much of the biodiversity heritage of the Arab countries.

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[171] Draz, O. (1969). The Hema System of Rangeland in the Arabian Peninsula. FAO/PL/PEC/13.
Kassas, M. (1972). National Parks in Arid Regions. Proceedings of Second World Conference on National Parks.
Ghabbour, S. I., 1975. National parks in Arab countries. *Environ. Conserv.*
UNESCO, 1996. Protecting Natural Heritage in North Africa and the Middle East. UNESCO, Cairo.

[172] Hegazy, A. K. (2000a). Intra-population variation in reproductive ecology and resource allocation of the rare biennial species Verbascum sinaiticum Benth in Egypt. Journal of Arid Environments.
Hegazy, A. K. (2000b). Reproductive diversity and survival of the potential annual Diplotaxis harra (Forssk.) Boiss. (Cruciferae) in Egypt. Ecography (accepted for publication).

[173] UNESCO/UCO (1998). Multipurpose Species in Arab African Countries. UNESCO Cairo Office.

[174] UNEP et al., op. cit.

The concept of biodiversity "Hot Spots" as sites of exceptional and invaluable concentrations of species with high levels of richness and endemism has quickly become of utmost importance.[175] There are ten major hot spots in the Arab Region including: the Levantine uplands, the mountains of northern Iraq, the highlands of south-western Arabia, including part of the Asir mountains, Socotra archipelago (Yemen), Dhofar fog oasis, Imatong mountains and surrounding lowlands on the border between Sudan and Uganda, Jebel Marra, Jebel Elba area, Tassili d`Ajjer, and the High Atlas mountains which extend along the northern part of Morocco and into Tunisia.[176]

The regional seas of the area are rich in species diversity, with more than 330 species of corals, 200 species of crabs, 20 species of marine mammals and more than 1,200 species of fish present in both Red Sea and the Gulf.[177] Endemism is recorded in many groups of fauna and flora and is high among marine invertebrates.[178] Wetlands, mangrove forests, sea grass beds and mud flats also represent unique marine habitats with high biodiversity.

One of the major acts of habitat destruction in the region is that of the disappearance of the Mesopotamian Marshlands in Iraq, which represents a major environmental catastrophe demonstrating one of humanity's worst engineered disasters. This has resulted in a large-scale extinction of species of global, regional and national importance, and impacts the estuary and marine ecosystems of the Gulf, disrupting the economy of local people living in the region.[179]

b. Achievements

There is an ongoing scheme of establishing protected areas and biosphere reserves all over the region. The total area that has been officially declared as protected areas remain less than 5 percent of the land area, below world standards (10 percent). Nevertheless some countries are targeting to increase their protected areas to more than 15 percent within the next decade. Currently, the countries of the region have amongst them over 150 protected areas and 14 biosphere reserves. The percentage of protected areas in Oman has reached 13 percent, whereas in Saudi Arabia and Egypt covers about 8.8 percent and 7.5 percent[180] of total land area, respectively. In Algeria, Jordan and Sudan, the percentage of protected areas exceeds 3 percent of the total land area. Between 1993 and 1999 more than 30 regional meetings were convened to promote inter-Arab cooperation in biodiversity conservation, in which most of the Arab countries regularly participated. The Council of Arab Ministers Responsible for the Environment (CAMRE) produced a comprehensive policy programme in biodiversity conservation in 1995.

In terms of international biodiversity conventions, most countries of the region have become parties to the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Migratory Species (CMS) and to a lesser extent the RAMSAR Convention on Wetlands.

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[175] Myers, N. (1990). The biodiversity challenge: Expanded hot spots analysis. *The Environmentalist.*

[176] UNEP, CEDARE, ACSAD, AGU, State of the Environment in the Arab World, Draft 2001.

[177] Fouda, M.M., Hermosa, G., and Al-Harthi, S. 1998. Status of Fish Biodiversity in the Sultanate of Oman. Italian Journal of Zoology Speciale, Vol.65, Supplement 1.

[178] Sheppard, C., C. Price and C. Roberts (1992). Marine Ecology of the Arabian Region. Academic Press, London, United Kingdom.

[179] UNEP, 2001. The Mesopotamian Marshlands: Demise of an Ecosystem Early Warning and Assessment Technical Report UNEP/DEWA/TR.01-3

[180] EEAA, 1998. Towards Establishing a Network Plan for Protected Areas in Egypt. Nature Conservation Sector, EEAA, Egypt.

c. Constraints

The constraints for the conservation and protection of biodiversity and habitats include; water scarcity, land degradation, poverty, weak enforcement of regulations and conventions, and lack of financial resources in most countries. In addition, there are difficulties in translating plans and strategies into actions in which the community participates, as well as a lack of trained professionals in various fields of biodiversity in the region.

The lack of a comprehensive and integrated approach to conserve biodiversity and a clear understanding of the value of ecosystems in terms of structure and function hinder the region's ability to sustain biodiversity. Among the other constraints are the weak participation of local communities and non-governmental organizations in conservation programmes established in most countries of the region. In most cases, conservation movements are mostly government initiatives and thus continue to face dissatisfaction from local populations.

6. *Air Quality*

a. Priority Issues and Status of Air Quality in the Arab Region

Urban air pollution is emerging as a serious problem facing not only major cities but also many medium sized cities in the region. Such cities are experiencing air pollution with gases, particulates and lead at levels often exceeding the WHO guidelines.[181] Urbanization, industrialization, and energy production and use are the driving forces leading to air pollution problems.

City dwellers are exposed to respiratory diseases such as asthma, bronchitis and emphysema. This is attributed to exposure to noxious doses of industrial emissions, car exhausts and other harmful pollutants, particularly in the congested metropolitan centers. The situation is exacerbated by rapid urbanization, the use of old technologies and the inadequate measures to curtail air emissions. Seasonal sand storms can deposit sand, organic matter, nutrients, agrochemicals and other pollutants on land and sea, often over great distances and in quantities that could exceed 140 t/km^2 per year especially during the dry summer months over the northern part of the Gulf area.[182] Total suspended particulates (TSP) in air can exceed in some Arab cities 700 $\mu g/m^3$, whereas dust storms can aggravate the air quality situation (raising the levels of TSP by over 300$\mu g/m^3$).

The main sources of air pollution in the region are energy and industrial production and vehicular emissions, which tend to expand with economic growth.[183] Vehicle emissions are considered the most prevailing source of air pollution amounting to 90 percent of the emission of CO, due to poor maintenance, car aging, low quality fuels and poor traffic management and road conditions.[184] Stationary sources, such as outdated power generation stations, refineries, fertilizer plants, cement manufacturing, and thermal water desalination and power plants also significantly contribute to air quality deterioration, especially where low fuel quality is used for power generation. Arab vehicles emit 1.1 million tons/year of nitrogen oxides (NO_x), 3 million tons/year of hydrocarbons (HC).[185] Diesel engines also emit sulfur dioxides (SO_2) and fine particulates. NO_x along with SO_x cause acid rain/deposition. NO_x and HC are the precursor of the photochemical smog and elevated ground levels

[181] WB.1995. Middle East and North Africa Environmental Strategy: Towards Sustainable Development. The World Bank, New York, USA.
[182] ROPME 1999. Regional Report of the State of Environment. The Regional Organization for the Protection of the Marine Environment (ROPME), Kuwait.
[183] UNEP et al., op. cit.
[184] World Bank, 1994. Industrial Pollution Projection System.
[185] Ibid.; World Bank, 1999 World Development Indicators, The World Band, Washington D.C.

of ozone in cities. Lead, used as an additive in petrol, still accounts for more than half of total lead atmospheric emission in the Arab countries and almost 100 percent in urban areas.

Industrial estates and manufacturing facilities emit gases including, CO, SO_x, volatile organic carbons (VOCs), particulates and NO_x. Carbon dioxide emissions in the Arab Region have increased considerably from 141.6 million metric tons of carbon in 1980 to 254.3 million metric tons in 1998. In the GCC countries, total annual per capita atmospheric emission loads is about 3.85 tones, made of 28 percent CO, 27 percent SOx and 23 percent particulates.

Most Arab cities lack long-term ambient air quality monitoring data, although some have compiled large amounts of air data in a raw form. In some countries, there are several agencies involved simultaneously in collecting air quality data, often without quality control/quality assurance programmes and/or integration of data analysis.

b. Achievements

Most Arab States have passed legislation to protect the environment including setting ambient air quality criteria and emission standards for industrial activities. In most Arab countries lead, CO_2 and sulfur emissions are decreasing due to the promotion of unleaded gasoline, use of catalytic converters and improved diesel quality. Some countries have emphasized railways and underground transportation infrastructures, including electrified lines such as in Algeria, Egypt, Morocco, and Tunisia.[186]

Several programmes for upgrading energy efficiencies, particularly in the power and industrial sectors have been developed and implemented. For instance, a sub-regional electricity interconnection was initially agreed to between Egypt, Iraq, Jordan, Syria and Turkey, with Lebanon have requested to join. The Egypt-Jordan-Syria link is already completed and is expected to be linked to the North African sub-regional electricity interconnection by the end of 2001. The main objective of the sub-regional grid is to improve the reliability and efficiency of electricity networks by pooling sources and benefiting from the different load structures of clients. Load peak demands could thus be smoothed to some extent[187] so as to provide better quantity and quality service. The environmental benefits of the interconnection include higher efficiencies, thus reducing emissions and air pollution; the integration of renewable energy sources, especially hydro-resources. It also means a better siting of power plants and a reduction of installed power and consequently a reduction in polluting emissions or greenhouse gases (GHG) and acid rain, as well as reduced impacts on coastal and marine resources.[188]

In the transport sector, fuel efficiency and fuel switching have led to an improvement in air quality. For instance, an initial disincentive for the promotion of fuel-efficient vehicles, which encouraged the sale of large-sized powerful cars and vans, was the below-market cost of gasoline in the region during the early part of the last decade.[189] However, most countries have recently readjusted fuel prices to closely match market prices, which will likely encourage a shift to smaller, more fuel-efficient and less polluting vehicles. Furthermore, unleaded gasoline witnessed a significant increase in use in some countries, particularly Egypt where it now accounts for about 90 percent of annual gasoline consumption. Natural gas has also replaced other forms of energy in several sectors.

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[186] UNEP et al., op. cit.

[187] ESCWA, *Technical and Economic Aspects of the Establishment of a Regional Electricity Network*, Document #: E/ESCWA/ENR/1997/3; 20 August 1997, English, United Nations, New York, 1997.

[188] ESCWA, Technical and Economic Aspects of the Establishment of a Regional Electricity Network, Document #: E/ESCWA/ENR/1997/3, 20 August 1997 (English), United Nations, 1997.

[189] ESCWA, *Review of Transport in ESCWA Member Countries*, Number 11, Document # E/ESCWA/TRANS/2000/1, English, New York: United Nations, 10 April 2000.

Air emission control programmes are becoming common in several Arab countries, especially in the new or upgraded cement, steel and aluminum and petroleum refineries. The concepts of resource conservation, cleaner production, and sustainable development are gaining momentum, and expected to have positive impacts on the environmental quality (including air) in the future. There are at least three cleaner production centers in the region and at least three more are at the planning stage.

c. Constraints and Challenges

Most Arab countries lack long-term ambient air monitoring data. Those that have compiled large amounts of air quality monitoring data, mostly lack the experience and expertise in data analysis and interpretation.

One of the major challenges to improve urban air quality is replacing the aging vehicle fleet, and the industrial capital stock with new cleaner production technologies. It is also challenging to move small and medium industries in and around the cities to more appropriate places outside urban zones. In non oil producing countries, there is a lack of adequate resources to use eco-efficient energy such as natural gas and solar energy, and to upgrade energy efficiency in the power and industrial production sectors.

7. Upper Atmosphere (Climate Change and Ozone Depletion)

I. Climate Change

a. Priority Issues and Status of Climate Change in the Arab Region

In the Arab Region, fossil fuel burning is the largest source of atmospheric polluting GHGs. The Arab countries are home to 5 percent of the world's population, contributing about 4 percent of annual global carbon dioxide emissions.[190] The increase in energy production and consumption as well as in the number of vehicles in major cities is the main source of air pollution in the region. The Arab countries production of energy has increased from 46.8 quadrillion Btu in 1980 to 56.5 quadrillion Btu in 1998, about 15 percent of the world's total primary energy production. Their consumption however has more than doubled during the same period from 6.27 quadrillion Btu to 15.2 quadrillion Btu, 4 percent of the world's total primary energy consumption.[191] Countries that had long established industries like Egypt and Morocco showed increases in their consumption that were more than two fold, while countries with emerging industries like Syria and Jordan showed a three fold increase. The Gulf Region however witnessed an even sharper rise in the consumption of energy and has become one of the highest per capita commercial energy consumers in the world.[192] It is worth noting however, that the annual growth rates of energy consumption have been declining, for example, from 5.7 percent per year in 1996 to 2.8 percent in 1999. It is also worth noting that the Gulf States GHGs emissions are not attributed to domestic fossil fuel burning, but rather to oil production and refining to meet the global market demand. There are already signs that this rate will decline as more oil companies adopt zero emission flaring in their oil operations. Expansion in the use of natural gas in power/desalination plants over oil will further reduce GHGs emissions.

The impact of climate change on the Arab Region is not fully examined and understood. Records of annual temperatures during the period 1900–96 show almost no change for most of the Middle East part of the region. There was no discernible trend in annual precipitation during 1900–95 for the region as a whole, nor in most parts of the region—except in the southwestern part of the Arabian Peninsula, where there was a 200 percent increase.[193] Climate models project that temperatures in the

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[190] U S Energy Information Administration, 1998. International Energy Outlook.
UNEP, CEDARE, ACSAD, AGU, 2001. State of the Environment in the Arab World, Draft.
[191] U S Energy Information Administration, 1998. International Energy Outlook.
[192] World Bank, 1999 World Development Indicators, The World Band, Washington D.C.
[193] IPCC, 1998. "Special Report on the Regional Impacts of Climate Change, Chapter 7: Middle East and Arid Asia".

region may increase by 1–2°C by 2030–2050. Precipitation is projected to increase slightly in the winter throughout the region and in the summer in the southern part of the Arabian Peninsula. The region is mostly arid and semi-arid and is dominated by deserts, meadows and some woodland. Vegetation models project little change in most arid (or desert) vegetation types under climate change projections. The impacts may be greater in the semi-arid lands. Improved water-use efficiency by some plants under elevated carbon dioxide (CO_2) may lead to some improvement in plant productivity and changes in ecosystem composition. However, that would not outweigh the negative impacts of elevated temperatures. Food and fiber production concentrated on more intensively managed lands could lead to greater reliability in food production and reduce the detrimental impacts of extreme climatic events, such as drought.

The above view is contradicted by other studies in which it was predicted that the impact could be specially significant, and it will cover various aspects, including fragile land resources, ecosystem, water resources, coastal zones, human settlements, tourism and biological diversity. In the drylands, which is dominate most of the region, the population growth will push people to marginal land, which is drastically vulnerable to climatic changes. Management of water resources will be most difficult in a sub-region already suffering from water problems. More frequent droughts are likely to occur, which could seriously impact the availability of food, as in the horn of Africa (including Somalia) during the 1980s and 1990s. In fact, climate change could aggravate the region's vulnerability to natural disasters, which include drought and food shortage, floods, cyclones, and pest infestations. El Nino, an irregularly periodic climate phenomenon that alters the regular wind pattern and blows moist wind from east to west, has obvious impacts on the region.

b. Achievements and Predictions

The emissions in the high emitting countries have dropped between 55 and 16 percent in the nineties. This was a direct result of national policies adopting programmes for cleaner energy measures, employing new efficient technologies and setting standards for air quality.

With a few exceptions most countries of the region have ratified or accessed the United Nations Framework Convention on Climate Change.

c. Constraints and Challenges

The lack of solid research and assessment of the extent and severity of potential climate change on the region is a major cause of concern, especially as regards impacts on precipitation patterns and distribution and sea level rise. In view of the fragility of the ecosystems in the region, the precautionary principle should be used as a base for analysis of potential climate change impacts on water resources, land and on the coastal areas.

II. Ozone Layer Depleting Substances

a. Priority Issues and Status of Compliance with Montreal Protocol in the Arab Region

In general, countries of the region encounter harsh weather conditions, especially during the summer season. These circumstances made the Ozone Depleting Substances (ODS) extremely important, affecting all social and economic sectors and activities. Regardless of the socio-economic level of citizens in the region, almost every family owns various ODS-relevant equipments (e.g. refrigerator, water coolers, air conditioning at homes, public buildings and cars, etc.).

All Arab countries (except Iraq and Palestine) have ratified or acceded to the Vienna Convention and the Montreal Protocol (MP). Based on the "Status of Ratification of the Montreal Protocol, Ozone

Secretariat, August, 2001", out of the 22 Arab countries, most countries have ratified at least two of the four of the Protocol amendments.[194]

In West Asia, a regional ODS network has been established since 1997, and is actively working to coordinate activities and information exchange between member states and relevant organizations and secretariats. Coordination with North Africa is taking place through the Council of Arab Ministers Responsible for the Environment (CAMRE).

b. Achievements

With the exception of Iraq and Palestine, all Arab countries are operating under Article 5 paragraph 1 of the Montreal Protocol. Some countries are ahead in requesting the support from the Multilateral Fund of the Montreal Protocol (MFMP) (e.g. Egypt, Jordan and Tunisia submitted their request and have received the support since 1991), and other countries have only recently requested such a support (e.g. Libya, Kuwait, and Somalia). These Arab countries that benefited from the MFMP have succeeded in replacing ODS in most sectors and activities.[195] Most Companies in such countries have gained access to the MFMP to complete the conversion processes and improve their infrastructure and products in terms of ODS alternatives. The GCC countries, although most of them have not received financial support from MFMP, have enforced the implementation of MP by their national regulation frameworks, especially in replacing ODS in industry.[196]

Capacity building programmes provided to member states, government initiatives and media campaigns have all contributed to the level of success accorded to the substitution of OD with the alternatives.

c. Constraints and Challenges

Although all parties in the Arab Region have enforced the implementation of MP, they have not all received the same financial and technical support from the MFMP. Furthermore, there are some countries who have not received any support from MFMP (e.g. Comoros, Djibouti, Saudi Arabia and UAE) for lack of capacity (Comoros, Djibouti) or being considered as high-income countries as is the case with the GCC countries. Indeed many of the GCC countries have experienced difficulties in getting their projects approved, because these countries are categorized as high-incomes states. This situation has created a dilemma since these countries are also classified as Article 5 countries, and therefore eligible for obtaining support.

Although most Parties in the region have succeeded to meet the 1999 freeze of CFCs. The latest report of the ExCom 34th Meeting (Montreal 18-20 July 2001) has recognized that some countries are not likely to meet their freeze obligations, which requires greater efforts from all Parties to achieve this objective.

B. NATURAL DISASTERS

Drought and Flash Floods

a. Status

The Arab Region is characterized by hyper-arid and arid climatic conditions, affecting more than 78 percent of its total area. Other climatic conditions, including semi-arid and dry sub-humid, affecting relatively limited areas. Since Biblical times, the inhabitants of the Arab Region have endured recurring drought episodes of varied nature, severity, and impacts. Drought is still a major issue of

[194] UNEP 2001, Status of Ratification of The Montreal Protocol, Ozone Secretariat, August, 2001.
[195] UNEP/DTIE , 2001. "Trend Analysis" a report issued by UNEP/DTIE in June 2001.
[196] Report of the 34th meeting of the ExCom of the MFMP, 21 July 2001.

concern in the region, which has serious socio-economic implications. Some parts of the region, such as Northwest Africa, are characterized by high rainfall variability and recurring droughts.[197] Drought coupled with the unwise use of natural resources in the region is considered as one of the main causes of desertification.[198]

The negative impacts of drought include reduction of productivity, degradation of natural resources, and human and societal conditions, immediate and deferred economic considerations. Among the direct impacts of immediate concern is the sizable reduction of productivity of rangelands and rain fed cultivated areas, and shortage of water resources. Hydrological and agricultural droughts effectively reduce soil moisture and certain nutrient availability thus reducing productivity of rain fed fodder and food crops. The reduced productivity of rangelands negatively affects livestock carrying capacity, fertility, and livestock products. The most important and direct impact of drought is on crop yields, planted acreage, and, in certain cases, the acreage of export crops.[199] Farmers grain storage also are reduced leading to successive planting failures and reduction of the seed reserves for cultivation in the following season. Reduction of food production levels due to drought exerts considerable pressures to bring more land into production, forcing farmers to cultivate marginal lands, which are originally, productive rangelands and thus accepting lower productivity as well as loss of grazing lands. The sensitivity of marginal cultivation to climate variability is especially great. Drought could have an added impact in shifting agroclimatic zones.[200] Drought conditions invariably lead to degradation of natural plant cover, which is already deteriorated by overgrazing of palatable plant species.

One of the major impacts of drought is the migration of people from rural areas to urban centers. During prolonged drought, members of the farmers and rangeland herders' families migrate to the urban centers in search of work. These are mostly the younger generation, which are the backbone of the labor force in rural areas. In case of severe droughts, entire families abandon their land in search for emergency food supplies at famine relief centers.

Droughts have significant adverse impacts on several economic parameters including increased food imports, imbalance of import/exports, price volatility and market failure, movement of surplus food commodities, as well as the decline of individual, family and national incomes. Many socio-economic and political factors, including rapid population growth, uncontrolled urbanization, poorly regulated industrialization and effects of colonization, induce changes in agricultural practices, and progressively intensify land use patterns. In some countries whose economy depends largely on rainfed agriculture such as Morocco, fluctuations in GDP reflect weather related agriculture output.[201]

Flash floods are also a natural hazard in several countries in the region. They normally occur following brief downpours of heavy rain. The shallow soil is picked up in the surface run off. In the absence of vegetative cover to ameliorate the effect of the rain, it concentrates and runs off in the form of floods. The flood flow is normally laden with sediments, which are deposited off site. Flash floods are a serious risk to human lives, livestock, and properties.[202]

b. Achievements

Nationally, countries have responded to drought effects by manipulating their agricultural and water policies and giving priority to the drought-affected areas. This includes the provision of subsidies to cope with drought consequences, water use rationalization and obliteration of irrigated crops. Some of

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[197] Swearingen, W.D. (1996). "Is Drought Increasing in Northwest Africa? A Historical Analysis" In: W. D. Swearingen and Abdellatif Bencherif, ed., The North African Environment at Risk. pp. 17-34 Westview Press.
[198] UNEP 2002 Global Environment Outlook 3. West Asia Draft report.
[199] UNEP et al., op. cit.
[200] Parry, M. (1990). Climate Change and World Agriculture. Earthscan Publication limited. Jordan.
[201] African Development Bank ,1999. African Development Report: Infrastructure development in Africa. ADB, Abidjan, Côte d'Ivoire.
[202] UNEP 2002. Global Environment Outlook 3. Draft

the countries of the region are taking drought as a serious issue and are trying to find long-term solutions, including financing employment generation projects in rural areas to keep farmers on their lands.

Governments in the Arab Region have developed policies to avoid or to mitigate the drought hazard, including changing agricultural practices and technology, and rearranging land use patterns, both "vertically" (through reduction of fallow) and horizontally (through extension to low-rainfall marginal poor soils areas). Many efforts have been carried out to avoid the expansion of cereal cultivation to drought prone rangelands.

c. Constraints

Most Arab Countries, and more specifically the most vulnerable people, do not have the adequate coping capacity to deal with drought or flash floods. This includes infrastructure, experience and knowledge and the financial resources. Coping with drought situations is hindered by weak forecasting capacities and inadequate availability and access to suitable information, including satellite data. Further, emergency response facilities, contingency planning, risk management and preparedness plans are either lacking or not adequate. There are also no adequate supplementary water resources to be used in case of emergency, such as supplementary irrigation systems. Studies, research and regional cooperation on issues of drought and flash floods is limited and not proportionate to the needs of the region. Moreover, regional aid and relief programmes are rather limited to meet the needs of emergency.

C. PRESERVING CULTURAL HERITAGE

a. Status of Cultural Heritage in the Arab Region

The numbers of ethnic and culturally diverse groups in the Arab Region, the vast movements of its population, the ever-expanding trade routes, the wars and political conquests, the rise and collapse of empires and states and the juxtaposition of civilizations explain the diversity and pluralism of the region's heritage. In addition to being the homeland of three main monotheistic religions (Christianity, Judaism and Islam) and due to its strategic location among three continents, the region was the birthplace of culture and civilization that were disseminated across nations. The Arab Region can trace the history of its civilizations to more than 11,000 years ago.

As a cradle of the world's major civilizations, the Arab Region is endowed with enormous wealth of cultural heritage that has vast potential for development. From this premise, there is increasing recognition in the region of the importance of cultural dimensions in inducing and managing development. Thus, there is a need to preserve the patrimony of the region and use the economic capacity of the cultural sector for empowering development in the region. The cultural patrimony can open up major opportunity for economic growth and provide a rich foundation for people's education.[203]

The causes of patrimony loss are related to social, environmental and natural, economic factors and institutional weakness. Despite the fact that monuments and cultural sites exit in abundance and are part of the everyday life, people's awareness of their heritage is limited. Thus, the perception of its potential is not adequate to preserve and utilize it.

There is another group of problems related to the environmental conditions, which vary between urban areas and regional ones. This variation is manifested in the ratio of carbon dioxide in air, the rates of heat and moisture change, salt-efflorescence and salt-subefflorescence. These conditions lead to the deterioration of monuments and cultural sites. Some are due to natural conditions while others are due to man's activities. Among those that are due to natural conditions are the major changes to stone

[203] World Bank, 2001. Culture heritage and Development : A Framework for Action in the Middle East and North Africa.

resulting from carbonates dissolving in water and the erosion of the carbonate minerals. The presence of nitrification bacteria also helps the formation of sulfuric and nitric acid.

Human-induced environmental deterioration of monuments and cultural sites in the region is caused by worn out potable water distribution networks in historic areas, inadequate and worn out and outdated sanitation and sewage systems, and heavy traffic which affects building foundations near ground level. Among the other factors are soil conditions in historic areas, where monuments were mostly built in a system of bearing walls in trenches with backfill-soil, garbage collection that accelerates urban deterioration as many historic cities are still dependent on primitively organized individual efforts. Wars and civil strikes have destroyed many historic areas and towns that were once tourist attractions, specifically the Israeli-Arab conflict. Earthquakes have also destroyed major historic sites and monuments, such as the Great Mosque in Baalbeck in Lebanon.

Modern urbanization has also had a negative impact on cultural heritage. The construction of modern buildings has lead to deterioration of urban aesthetics in historic and archaeological areas, as they do not match the ancient ones in form, color, or appearance. An architecture has appeared that has no link whatsoever in content and entity and is alien to either the local environment or the architectural features of heritage.

b. Achievements

Two cultural heritage categories are recognized in the region:

(a) Archaeological and historical sites, monuments and collections which include 48 sites already recognized by UNESCO as World Heritage Patrimony, with hundreds of other sites in various stages of conservation, or spread in various countries over the region serving as tourist attractions. Also a large number of ancient priceless collections are spread in various museums in the region and in other countries. This is in addition to urban and rural ensembles such as medina and kasbahs, which are a testimony of a unique heritage of civilization since the ancient time.

(b) Living culture heritage such as language, literature, folklore, traditional arts and crafts etc.
The Arabic language is easily capable of creating new words and terminology in order to adapt to the demands of new scientific and artistic discoveries. The traditions and values, which are largely rooted in Islam, are well preserved in the region. There is a growing interest in the traditional folkiore that has been preserved and perpetuated by the new generation in all the countries of the region. Traditional arts and crafts are also important economical assets that are widely spread in the region through small and medium-sized family enterprises.

c. Constraints and Challenges

Despite the abundance and variety of monuments and sites of cultural heritage in the Arab Region, the poor public awareness of this heritage value is the most important constraint facing the conservation of these sites. This may be attributed to the unfavorable social and economic status of the population in these areas, which is usually characterized by high population density. Except for Egypt and Tunisia, countries in the region have old laws or weak protection and regulations regarding such sites and cultures. Unless modern techniques and machineries are introduced in the artisan and crafts industries to make them attractive their survival in the future is weak. On the other hand, deterioration of monuments and cultural sites due to natural and/or man-made effects (e.g. acid rain), rising water tables and water management projects associated with development and urbanization represent a major concern in most member countries.

V. INTERNATIONAL AND REGIONAL CONVENTIONS AND AGREEMENTS SUPPORTING SUSTAINABLE DEVELOPMENT

A. MEAs and Regional Environmental Agreements

1.a International Multilateral Environmental Agreements and Conventions

In the Arab Region, the interest and political commitment to Multi-lateral Environmental Agreements (MEAs) have been reflected in the signing, ratifying and accession to more than 64 international and regional environmental conventions and agreements.[204] The importance and priorities of MEAs to the Arab Region however vary significantly from one agreement to another, and from one country to another. Among the most important MEAs are three conventions with sustainable development focus, the UN Convention to Combat Desertification (UNCCD), the Convention on Biological Diversity (CBD), and the United Nations Framework Convention on Climate Change (UNFCCC). Other important global conventions of significance and importance to the Arab Region are the Vienna Convention on the Protection of the Ozone Layer (Ozone) and the Montreal Protocol on Substances that Deplete the Ozone Layer (MP), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and the MARPOL 73/78 Convention. The region has also shown increasing political commitment to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Migratory Species (CMS), and the Ramsar Convention on Wetlands.[205]

Implementation of MEAs in the region however has been rather modest for many countries due to the lack of adequate resources (financial, technology, human). This is influenced by many factors, among the key ones are the international interest and pressure to implement specific agreements, and the absence of external financial resources that were to be made available to developing countries from developed countries. Of all the conventions mentioned above, the Montreal Protocol has achieved the most successful level of implementation in the Arab Region, which shows the Arab Region's commitment towards global environmental issues when financial resources and technical support are made available. On the other hand, conventions of primary interest to the region, especially UNCCD and CBD, have not achieved significant progress. This is largely because of the weak international interest and the limited external funding that was made available to the region, combined with inadequate national and regional resources, infrastructures and expertise to bring about tangible progress specially on socio-economic stability, a situation that requires careful consideration by the international community and countries of the region.

Over the last decade, the implementation of most MEAs in the region was focused on setting the frameworks, priorities, development of strategies and action plans, and mobilizing funds. There has been little implementation at the field level, with the exception of the implementation of individual pilot projects. This has been the case with CBD, and UNCCD.[206]

The mode of compliance with MEAs in most countries of the region relies heavily on existing legal instruments in dealing with major environmental issues. Some countries however are in the process of formulating bylaws regarding specific conventions. The command-and-control approach has been the most favored policy approach for implementation of the different MEAs in the region. Market based economic instruments have not been given enough attention, at least in the past. However, economic instruments such as incentives, taxes and charges, pricing strategies and other indirect measures are applied to a few MEAs such as the Montreal Protocol and the UNFCCC conventions.

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[204] UNEP 2000 Global Environment Outlook (GEO-2).

[205] UNEP et al., op. cit.

[206] UNEP/ ESCWA. 1991a. The National Plan of Action to Combat Desertification in Bahrain. UNEP. Bahrain.

UNEP/ ESCWA. 1991b. The National Plan of Action to Combat Desertification in the United Arab Emirates. UNEP. Bahrain.

UNEP/ ESCWA. 1991c. The National Plan of Action to Combat Desertification in the Republic of Yemen. UNEP. Bahrain.

UNEP/ ESCWA. 1992. The National Plan of Action to Combat Desertification in the Sultanate of Oman. UNEP. Bahrain.

1.b. Regional Environmental Agreements

Regional conventions and agreements have generally achieved greater levels of compliance by the countries of the region since they deal with regional environmental issues and priorities and have received immediate political support through ministerial forums that oversee the implementation of these legal instruments. Public awareness towards regional environmental agreements and conventions is also rather stronger than towards international ones. Member states have often called for more immediate interaction between the MEAs Secretariats and the implementing or coordinating UN agencies in the region, as in the case of the Montreal Protocol. Nevertheless, the number of regional agreements is rather limited. The key ones are the regional seas conventions, namely; (1) Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution – ROPME (1978), (2) Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment- PERSGA (Jeddah, 1982), and (3) Convention for the Protection of the Mediterranean Sea Against Pollution – MAP (Barcelona, 1976). These conventions have proven to be useful regional instruments for the protection and sustainable use of marine and coastal resources in the region.

1.c. Implementation of Soft Laws

Agenda 21 has been the most widely accepted and effective soft law that is guiding environmental management in the region. Some countries, such as Tunisia and Saudi Arabia, have developed national Agenda 21. Some countries of the region, other than the GCC countries, have been trying to utilize global funding mechanisms, such as the Global Environmental Facility-GEF, as well as other international donors and Regional Development Banks (such as the Islamic Development Bank-IDB) in the implementation of the MEAs.

2. Achievements

Global Conventions have been a significant driving force for institutional capacity building of national institutions, and for establishing new ones for the follow up of specific conventions. There have also been efforts towards priority-setting, adoption of national strategies, and action plans in areas related to MEAs. These efforts were also extended to public awareness of MEAs. Global MEAs have also catalyzed regional coordination on transboundary issues through the existing or specially established regional organizations, e.g. ROPME and PERSGA Regional Seas organizations.

At the regional level, sustainable development is addressed mainly through several Ministerial forums. The Council of Arab Ministers Responsible for the Environment (CAMRE) was established in 1987. It is the largest Ministerial Forum dealing with the environment. The GCC, MAP, PERSGA, and ROPME Councils are sub-regional forums, the latter three of which have established MOUs with UNEP. In West Asia (including Egypt), the Ministers of Planning/ and or Economy address sustainable development through the ESCWA Ministerial Council. The Arab Ministers of North Africa participate in the Economic and Social Commission for Africa (ESCA). In October 1992, CAMRE promulgated an Arab response to UNCED's Agenda 21 entitled " The Arab Programmes for Sustainable Development." It included 13 programmes related to sustainable development; the activities within each programme have been cross-referenced to the relevant sections of Agenda 21. CAMRE represents the key inter-governmental governance body in the region. CAMRE has also established the Joint Committee on Environment and Development in the Arab Region (JCEDAR) in 1992, to facilitate coordination and cooperation amongst member countries and Arab, regional and international organizations.

The Abu Dhabi Declaration (2001) of the Council of Arab Ministers Responsible for the Environment (CAMRE) on Perspectives of Environmental Action in the Arab Region provides a framework for environmental actions in the region for the 21st century.

3. *Constraints*

The large number of MEAs has been a main obstacle to compliance and enforcement of multilateral agreements in the region. Governments have become overloaded by reporting requirements of the growing number of conventions. This is in addition to the lack of clear mechanisms for implementation, which has resulted in inadequate compliance to MEAs. Other key barriers, that hindered the implementation of MEAs in the region include lack of adequate finance, insufficient institutional capacity, difficulty in adopting adequate environmental policy, organizational culture, inadequate negotiation capacity of some countries, the marginal involvement of the civil society and the private sector, and the limited coordination and information available on multilateral environmental agreements, especially for the public.

B. ECONOMIC AND TRADE AGREEMENTS AND ALLIANCES

Over the past ten years, most Arab countries have negotiated and entered into new multilateral and bilateral economic agreements. While their impacts have been varied, this trend supports continuity in the economic reform processes and fuels greater trade and investment in the region. It also facilitates the integration of the economies of the countries into the global economy. Membership in trade agreements has also stimulated compliance with higher environmental standards by regional exporters seeking to take advantage of easier access into developed country markets.[207]

1. *Global*

Over the past decade, globalization trends have prompted most Arab countries to more actively seek membership in the World Trade Organization (WTO). Nine countries (Bahrain, Egypt, Jordan, Kuwait, Oman, Qatar, Morocco, Tunisia and the UAE) are now WTO members. Three others (Lebanon, Saudi Arabia and Yemen) are at the negotiation stage, while Lebanon obtained observer status in 1999. There have been institutional, policy and business responses to WTO agreements.[208] On the institutional front, countries of the region have been adjusting their institutions to better address trade and environment concerns. Regional policy responses on the other hand have focused on preparation for the WTO new round of negotiations. Globalization trends have also motivated greater regional activity and exchange on the costs and benefits of harmonizing and/or approximating regulatory instruments, e.g., environmental standards and customs procedures to facilitate trade. It has also prompted more Arab states to become involved in trade-related MEAs, e.g., the Rotterdam Convention and Prior Informed Consent (PIC) procedures as well as the Basel Convention.

2. *Regional*

Regional economic integration provides a stepping stone for effective inclusion in global economic arrangements. Two regional economic arrangements were recently formalized and are enjoying increasingly expanded membership: The Euro-Mediterranean Partnership Agreement and the Arab Free Trade Area.

The Euro-Mediterranean Partnership was launched in Barcelona in 1995 and seeks to achieve, among other things, free trade between the European Union (EU) and twelve southern Mediterranean countries. Three Arab countries have ratified association agreements with the EU (Tunisia, Morocco and the Palestinian Authority). Egypt and the EU also signed an agreement in 2001 (but it is pending ratification). There are four other Arab countries (Algeria, Jordan, Lebanon and Syria) still engaged in negotiations with the EU. However, achievement of a full partnership by the 2010 target date seems unlikely because of the slowness of the ratification process and various sticking points in the negotiations. The elimination of tariffs will significantly reduce revenues for many governments in the region (particularly Jordan and Lebanon), thus requiring economic and fiscal adjustment (e.g., tax

reform) in order to secure sufficient income to sustain social services. Euro-Mediterranean Partnership agreements may also result in "hub and spokes" arrangements between Arab countries and the EU unless appropriate and effective policy responses are implemented in support of Arab economic integration.[209]

Some progress has been achieved in realizing a pan-Arab economic block via the Arab Free Trade Area (AFTA). Since implementation of the agreement began in 1998, 14 member states of the League of Arab States have acceded to the AFTA, accounting for 90 percent of Arab external trade and 95 percent of intra-regional trade.[210] Out of the eight remaining Arab League countries that have not signed the agreement, six are listed among the least developed states ((Djibouti, Sudan, Somalia, Palestinian Authority, Comoros, and Mauritania), and two (Algeria and Yemen) are in the process of economic reform.[211] Members of the AFTA have adopted measures to reduce tariffs by 10 percent annually on imports between each other, with tariff and non tariff barriers to be completely removed by the year 2005. The establishment of the AFTA constitutes a realistic and practical response to challenges posed by international trade and represents a more serious and comprehensive approach to Arab economic integration.[212]

Among other efforts targeting Arab economic integration is the Arab Common Market, whose membership consists of Libya, Mauritania, Syria, and Yemen, as well as the new economic alliance being forged between Morocco, Tunisia, Jordan and Egypt.

Regional economic integration and trade agreements provide an important forum for harmonizing environmental regulations and enforcement regionally and then upwards toward world standards. This is necessary so as to avoid the risk of environmental dumping in countries with more lax environmental regimes, as well as to ensure an even playing field for exports and investment in the region. Several meetings and consultations have already taken place between countries of the Arab Region to facilitate the harmonization process.

3. Bilateral

Many bilateral commercial agreements and alliances between countries of the region were negotiated and arranged over the last few years. None of these agreements, however, take special note of environmental considerations.

On the Arab-international front, Jordan and the United States ratified a new bilateral free trade agreement in 2000, which provides Jordanian manufacturers with tariff-free access into the US market. The alliance complements Jordanian aggressive new export strategy manifested by the establishment of several Qualifying Industrial Zones (QIZs) since 1998 and engagement in new trade and economic agreements. These policies have ushered in a new wave of investment and export activity in Jordan, and prompted rethinking on ways to strengthen institutions for environmental management as well as environmental compliance, in order to better support international competitiveness. For instance, the Government has promoted QIZs based on their ease of access to water, electricity and raw materials. Countries of the region have also begun to negotiate more bilateral investment treaties (BITs) in recent years.

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[209] ESCWA, *Review of Industrial Strategies and Policies: Preparing for the Twenty-First Century*, forthcoming from ID/SIPD, 2001.
[210] Ibid.
[211] Ibid.

4. *Constraints and Challenges*

The continued delay in addressing the Palestinian issue and the entire Arab-Israeli conflict in accordance with the UN resolutions represents a major challenge to sustainable economic and social development in the region. Achieving integration of economic policies and the establishment of a common Arab market also represent a major challenge to establishing an internationally recognized economic block.

As more countries of the region have begun to negotiate more bilateral investment treaties (BITs) with some consideration paid to environmental issues, some in the region seem to fear that stronger environmental regimes may dissuade foreign investment; even though many studies show that environmental standards rarely have a significant influence on foreign investment decisions.

C. SOCIAL AND CULTURAL CONVENTIONS AND AGREEMENTS

Human settlement, urbanization, population and gender mainstreaming are all social issues of crucial importance to sustainable development in the Arab Region. These issues are at the core of the social dimension, or third pillar, of sustainable development. The three relevant conventions, (the UN Conference on Population and Development (Cairo, 1994) the Fourth World Conference on Women (Beijing, 1995) and the Second UN Conference on Human Settlement - Habitat II (Istanbul, 1996)) have had an immediate impact on government policies in the region.

The extent and rate of urbanization in the region is varied, with some countries having over 70 percent of their population living in urban areas. Population densities also vary from 6.5 people/km^2 to 600 people/km^2. In the Second UN Conference on Human Settlements (Habitat II), held in Istanbul in 1996, an important change in the approach to human settlements was endorsed, acknowledging the need to guide urbanization not prevent it. [213]

Following the post-Istanbul period, while governments continued to focus on poverty elimination and creating job opportunities, greater emphasis has been put on human settlement development and the provision of shelter. More governments granted the private sector rights to develop various plots at affordable prices. Many have also increased the availability of residential areas through zoning and re-zoning. The streamlining of regulating processes and procedures for the housing sector development has also taken place in many countries. Generally, two parallel tracks have been adopted; direct actions to raise the standards of the poor and reforms and initiatives that aim at increasing social productivity to remove the causes of poverty and ensure welfare by addressing matters related to health, education, infrastructure, information and technology and employment. Another major achievement is the fact that governments, to varying extents, have succeeded in conducting national land-use planning. There has also been a noticeable progress in the management of cities and towns in the region and attempts have been made to reform and strengthen the performance of local councils in order to promote better urban governance.

An institutional framework for privatization has been established in Egypt and in Jordan as part of overall economic reform programmes. And more than ever throughout the Arab Region, civil society and NGOs have been encouraged to join hands with regional governments, or independently, to plan and implement projects in related areas.

National and regional organizations in the region have also introduced several initiatives that aim at raising awareness, establishing discussion forums and mobilizing political support at the highest level. Further, there is an increased awareness on the part of the private sector of their social responsibility towards the community in which they operate. This should be used to tap new resources to revitalize development programmes through public-private partnership.

1. Constraints

Issues relating to the persistent levels of poverty, limited human resources and weak urban institutions need to be addressed. Peace and stability are a pre-requisite for proper developments. The region yearns for their achievement in order to capitalize on developmental efforts. Governments and local authorities in the region do not always have sufficient resources to improve the quality of life in the cities. Finally, the institutional set-up is still unable to ensure the integration of all stakeholders in the social development policies and programmes of most countries of the region.

2. Challenges

In the poorer countries of the Arab Region, housing conditions are characterized by substandard housing with poor services and infrastructure. Slums and squatter settlements abound in many Arab cities. Efforts for post-war/post-conflict reconstruction and rehabilitation need to be mobilized. However, unrest in the Middle East and the world is often a challenge to any effort towards development. Most people from rural and less developed areas often flock to urban cities in search of a better life.

The proportion of the population living in urban areas is expected to reach over 75 percent by the year 2015. The region is expected to become increasingly urban in the next 25 years. This contributes to another urban challenge, which is the management of wastes and other urban environmental health problems.

D. LINKAGES BETWEEN AGREEMENTS

Sustainable development by definition stands on three pillars, the economic, the social and the environmental dimensions. The social dimension is being addressed through mechanisms developed at the UN Conference on Population and Development (Cairo, 1994), the Fourth World Conference on Women (Beijing, 1995) and the Second UN Conference on Human Settlement - Habitat II (Istanbul, 1996) and in cooperation with UN specialized agencies (Habitat, UNFPA, UNIFEM, UNDP and the Economic and Social Commissions). UNDP, the World Bank and the Economic and Social Commissions conventionally address development and UNEP addresses environment.

While the WTO was able to revive the debate over the relationship between trade and the environment, developing countries have become more suspicious that environmental issues will be used to further constrain their ability to compete in the world market. The role of the World Bank in achieving sustainable development in developing countries is also of concern in view of their experiences since Rio. Thus, developing a linkage between the global agreement secretariats and the UN specialized agencies is necessary in order to support the efforts of developing countries, including Arab countries, towards achieving sustainable development. However, as this takes place, it is important to integrate sustainable development into all MEAs as well as regional agreements. If clustering of the large number of MEAs is to be considered, it should not affect the benefits that current MEAs offer to developing countries

Even if linkage is established, there will still be the need for an implementation mechanism that sets up the policy and oversees implementation. Of the existing UN bodies, ECOSOC is the closest to fit this model to encompass the three pillars of sustainable development. As for implementation, consideration must be given to either the strengthening of CSD or of UNEP to carry out the expected function.

VI. CHALLENGES FACING SUSTAINABLE DEVELOPMENT AND OPPORTUNITIES FOR THE FUTURE

In addition to the socio-economic and environmental challenges noted above, other cross cutting challenges need to be met by the region in order to achieve sustainable development. Among these challenges are inadequate technical, human and financial resources,[214] as well as limited institutional capacity. These obstacles, along with changing political and economic dynamics, prevent the region from actively engaging in sustainable development planning, implementation and follow-up.

A. GOVERNANCE FOR SUSTAINABLE DEVELOPMENT

Governance is a challenging prerequisite to achieve sustainable development. It includes strengthening the institutional and legal frameworks, nurturing equitable participation in decision-making and promoting effective participation of the civil society and the private sector in the decision making process. Since UNCED, countries of the region focused on establishing and strengthening effective institutions and instruments for managing sustainable development in an integrated manner, formulating national environmental strategies (NESs) or policies, and developing national environmental action plans (NEAPs). They also formulated and strengthened environmental legislations and many have ratified regional and multilateral environmental agreements.[215]

However, efforts at integrated sustainable development have stagnated. NES and NEAP reports prepared by ministries of environment have become proxies for national sustainable development strategies (NSDSs) in most countries of the region. As such, many of these NESs and NEAPs have fallen short of integrating cultural, political, and socio-economic dimensions with the environment. NES and NEAP objectives and instruments were also commonly formulated irrespective of other national strategies,[216] with only a couple of countries instituting mechanisms to try to resolve differences between sector strategies and ensure that NEAP initiatives are integrated and implemented by line ministries. NSDS efforts have mostly been piecemeal and receive little financial support, with *ad hoc*, temporary national sustainable development commissions (NSDCs). If these exist, they are only being revived to respond to reporting demands for global conferences such as the WSSD. In order to better focus response to these shortcomings, three main challenges to effective sustainable development governance are detailed below.

1. Coordination and Complementarity of Sustainable Development Institutions and Instruments

The main challenge facing most decision-makers in the region is policy integration, namely how to effectively formulate, integrate and implement multi-sectoral sustainable development policies. This requires coordination and consultation between government *institutions*, as well as complementarity and coherence between policy *instruments* being implemented by different ministries.[217] These difficulties are exacerbated by the centralized, yet compartmentalized nature of governance in the region.[218] For instance, national environmental agencies in the region are generally assigned responsibility for sustainable development policy formulation and implementation. This reinforces the sector-based bias regarding sustainable development, and makes social and economic ministries less engaged and committed to articulated sustainable development goals. This practice also reduces the importance of the issue since environmental institutions in the region are generally not central to government decision-making or able to exert influence over line ministries.[219] Furthermore, there is limited communication between stakeholders and the bodies responsible for implementing and

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[214] Thematic RT Report.
[215] UNEP et al., op. cit.
[216] Thematic RT Report.
[217] Ibid.
[218] Ibid.
[219] Ibid.

overseeing enacted legislation related to sustainable development, which also explains why policies are not effectively implemented.

With regard to policy instruments, the region relies heavily upon regulatory mechanisms (command and control) rather than economic instruments and voluntary arrangements. It also uses environmental impact assessment (EIA) as a proactive, preventive instrument for assessment of impacts of projects. Nevertheless, its application has not been strictly implemented. Unfortunately, the use of sustainable development instruments has been applied piecemeal from a sector perspective, with little synergy, chronology or linkage sought between policies and programmes implemented by different ministries so as to maximize their collective impact.[220]

2. *Linking National and Local Sustainable Development Policies and Programmes*

While national environmental management and sustainable development processes have improved throughout the region, local initiatives have remained limited. Limited decentralization of legislative and financial powers is a major obstacle to formulating and financing the implementation of local Agenda 21s in most countries of the region.[221] Furthermore, while some local communities have developed local Agenda 21s (e.g., in Egypt, Jordan, Tunisia and the UAE), their ability to integrate social, economic and environmental dimensions has been limited,[222] as well as their capacity to prioritize key issues for presentation in national forums. Participatory and bottom-up approaches to policy formulation and public consultation are also often discouraged by cumbersome bureaucratic procedures[223] and political/security constraints. This means that national sustainable policies do not necessarily represent local priorities. The disconnect between local and national sustainable development planning efforts is echoed in national to regional to global linkages, which should be better organized to reinforce one another.

3. *Global Governance*

At the global level, there is a need to improve the governance system to be transparent and conducive to the needs of developing countries to be able to address the changes induced by globalization, the new world economic order and the information technology revolution. The role of the UN and other international agencies dealing with sustainable development needs to be elaborated to fit the requirements for achieving sustainable development. WSSD provides the opportunity and the platform for such a global exercise, keeping in mind that it is a sustainable development summit.

4. *Follow-Up and Accountability of the Sustainable Development Process*

Effective sustainable development governance also requires a system for monitoring progress in achieving stated targets and goals. While many countries of the region are progressing from the stage of planning to implementation, few mechanisms have been established to assess the quality or impact of policy and programme outputs. Furthermore, oversight arrangements for ensuring the integration of national sustainable development goals into sector-based work programmes are rare. Accordingly, public and/or private sector agencies should be assigned "watchdog" responsibilities to monitor and report on the effectiveness of government institutions in supporting sustainable development. Such a system of accountability could improve institutional performance, as well as inform and empower public stakeholders.

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[220] Ibid.
[221] Ibid.
[222] Ibid.
[223] Ibid.

B. STAKEHOLDER PARTICIPATION AND ACCESS TO INFORMATION

Since UNCED, public awareness of environmental issues has witnessed a remarkable upsurge in the region. The number of environmentally oriented NGOs has dramatically increased,[224] as has public understanding of key issues related to environmental protection and sustainable development.[225] Further, on the regional level, the Arab Network on Environment and Development and, on the sub regional level the Gulf Network for environmental NGO's were established.

While this progress is significant, the region needs to advance from increasing public awareness to promoting public participation so as to move from passive to more active engagement in the sustainable development process. Some progress has already been achieved to this effect, particularly with regards to environmental clean-ups, community building and women's issues. Governments have also more actively solicited the input of NGOs and private stakeholders for national and international forums. Their presence is gradually increasing and becoming evident in national delegations engaged in international negotiations.

The complex government systems and the prevailing culture, traditions and political norms in some countries of the region impede public participation in government decision-making processes.[226] This is because centralized systems of governance are generally organized from the top-down and thus cannot easily tolerate participatory bottom-up approaches, public pressure[227] or public systems of accountability. It is however noted that indigenous knowledge and traditional systems (such as tribal and Bedouins systems) have had major implications on the governance process overall, and on enforcement and compliance of legislation in particular.[228] On the other hand, the advocacy role of civil society has not been strong enough to be a key player in the decision making process. This is due partly to the fact that they are controlled and in most cases subsidized by governments. On the other hand, the civil society and the private sector have not yet developed a clear vision and framework for their active participation in the governance of sustainable development. They are however demanding a bigger role in the governance process, against a cautious government approach on how to involve them. Governments seem to be ready to consider an incremental approach rather than revolutionary one to give them a greater role.[229]

Effective public participation, as noted in Principle 10 of the Rio Declaration is based on adequate access to information. Since 1992, the Arab Region's interest in environmentally sustainable development created an increasing interest in incorporating environmental information in the decision-making process and in improving sustainable development governance.[230] As such, countries of the region have accumulated better knowledge and understanding regarding economic, environmental and social challenges and trends. This progress has been made possible by the spread and advancement of cost effective information and communication technology, mass media, and the development of improved monitoring and information networks.

Provision of higher quality information within governments has improved; nevertheless, public access to information regarding sustainable development remains limited. This is because information disclosure is still considered to be a highly sensitive issue by some authorities in the region, arising from the fear that information disclosure may cause public confusion and panic, discourage tourism

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[224] Ibid.
[225] Ibid.
[226] Ibid.
[227] Ibid.
[228] UNEP et al., op. cit.
[229] UNEP/ROWA 2001. Global Governance for Sustainable Development and Status of Environmental Governance in the Arab Region. Draft.
[230] Abdel-Kader, A. F., 1999. CEDARE Experience in the Use of Environmental Indicators. First Arab Conference on Environmental Indicators and its Role in Decision Making. Cairo, Egypt, 12-14 October, 1999.

and foreign investment,[231] or simply yield a loss of power and influence.[232] Public disclosure of corporate practices is also rare, with local communities unable to secure information on environmental pollution and potential health impacts caused by manufacturing facilities.

Nevertheless, there has been important progress in increasing public access to information, particularly through on-line medias. Many ministries and public agencies now have descriptive and substantive information posted on individual websites, which has helped in making reports and statistics more widely available. NGOs throughout the region have also been very active in posting and exchanging studies, conference materials and community notices on the Internet. It is noted that socio-economic information is more readily available than environmental.[233] This can be attributed to the recent interest in environmental issues compared to socio-economic issues that have been addressed for some time, and the fact that environmental information is often scattered across many agencies, ministries and institutions.

In spite of the remarkable increase in attention to information in support of sustainable development in the region, current efforts are undermined by the lack of the cornerstone on which all the information activities should be based on, which is the lack of national and regional information strategies and policies. There are also no agreements on the national or regional levels, which provide legal framework to provide access to information. In addition to these, there are other institutional, technical, and financial aspects, which hinder availability, access, and use of sustainable development information. Among these are data comparability and consistency, weak institutionalization of information systems, insufficient funding, shortage of skilled personnel, and suitable repackaging of information for decision makers and the public. [234]

C. ECONOMIC INSTRUMENTS AND VOLUNTARY ARRANGEMENTS

Effective application of economic instruments in the region is severely handicapped by several factors including ineffective environmental monitoring systems, incomplete environmental health records, inadequate ecological and health risk assessment and the lack of environmental accounting and monetary valuation of health and ecological impacts caused by unsustainable development.[235] Removal of subsides has been a general policy trend in the region, however some subsides are not easy to remove due to political, social and cultural constraints, for example provision of water for the agriculture sector.

Some countries in the region are applying the polluter pays principle especially in dealing with industrial pollution. Other economic instruments such as taxation for air pollution and municipal services operation levies are widely applied. The use of economic and financial instruments to control and prevent pollution through incentives and disincentives is also practiced. Soft loans are utilized in some countries.[236] Despite this progress, more effort needs to be made in coordinating the application of economic instruments between sectors so as not to skew market signals and encourage sustainable consumption of some resources at the expense of others.

The take-up of voluntary arrangements within the region has been slow, due in part to the limited participatory process of the region and the fact that public awareness raising activities require greater effort. The relationship between the private sector and other stakeholders (government and NGOs) is important in this regard. Voluntary agreements are not fully used by the regulatory authorities as a means of monitoring, thereby not presenting any real regulatory advantage to the private sector. With

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[231] Thematic RT Report.
[232] Dewachi, Regional Advisor on Communications and Computer Networking, loc. cit.
[233] Abdel-Kader, A. F., 1999. CEDARE Experience in the Use of Environmental Indicators. First Arab Conference on Environmental Indicators and its Role in Decision Making, Cairo, Egypt, 12-14 October, 1999.
[234] Abdel-Kader, A. F., 1999. Environmental Information Systems (EIS): Stewardship Towards Sustainable Development in the Twenty First Century. In Hegazy, A. (Ed.) Environment 2000 and Beyond. UNESCO, ICED, IDRC, Cairo.
[235] Thematic RT Report.
[236] UNEP et al., op. cit.

the relatively weak voice of NGOs in the region, the pressure they can bring to bear on the private sector is limited at the present time.

D. ENVIRONMENTAL MONITORING AND REPORTING AND INFORMATION NETWORKS

Environmental information is a necessity for reliable environmental monitoring, assessment and reporting of the state of the environment. It is the key to identify environmental concerns, trends, root causes, and impacts on the environment; and to identify current responses, as well as environmental emerging issues. It is also essential to draw effective strategies and ensure the relevance of policy responses to environmental and development issues, and to develop appropriate priority action plans.[237]

Environmental monitoring is not new to the Arab Region, as it was part of the old civilizations as well as the recent history. Most countries have set up some monitoring programmes with supporting laboratories to monitor coastlines, water resources, and air quality; however, these programmes are still limited in geographic extent, technological capabilities and consistency in operation. Most countries have established remote sensing and GIS institutions, centers, or divisions, which support environmental monitoring. The capacities of these facilities, however, are not fully utilized within coordinated planning to address sustainable development issues.

On the other hand, most countries of the Arab Region have not developed systematic approaches and systems for environmental assessment and reporting; however, there are endeavors to produce national state of environment reports (SOEs) in most countries, but with significantly different approaches and outputs. Some countries are producing such reports on annual or biennial basis, such as Tunisia, which is considered the most advanced in that regard. The process is hindered by many factors, among them: lack of institutional frameworks, inadequate capacity, shortage of experienced personnel and financial resources, lack of or inaccessibility to data, absence of appropriate indicators, and weak ties with other stakeholders, such as sectoral ministries and line agencies.

Positive efforts have been made by the League of Arab States, assisted by regional UN organizations, in identifying, harmonizing, testing and utilizing sustainable development indicators and indices for monitoring and reporting on sustainable development at the local, national, sub-regional, regional and global levels. The Blue Plan/UNEP/MAP has also been working on two kinds of projects related to indicators; the Environmental Performance Indicators project (EPI) and the Indicators for Sustainable Development Project (ISD), in which 130 indicators were selected for the Mediterranean. They have also developed "topical" indicators to illustrate specific themes such as water, tourism and wooded lands and soils, which are being applied in selected Arab Mediterranean countries.[238]

Several countries in the region have established national environmental information systems or networks. Some are comprehensive information systems, while others are environmental information systems. At the national level, several Arab Mediterranean countries (such as Morocco, Tunisia and Lebanon) have established National Environment and Development Observatories in the framework of the Mediterranean Action Plan.[239] At the regional level, with a joint initiative from CAMRE, CEDARE, and UNEP, 11 founding members from regional and international organizations serving the region established the Arab Region Environmental Information Network (AREIN).[240] The intention is to expand the network to include the national networks and information systems into one regional integrated network. There are also some efforts to establish sub-regional networks, such as for the

[237] Abdel-Kader, A. F., 1999. Environmental Information Systems, loc. cit.
[238] Blue Plan Web Site: http://www.planbleu.org/indexa.htm.
[239] UNEP/ROWA. Communication with UNEP/MAP.
[240] CEDARE web page: www.cedare.org.e...

GCC countries, and the Maghreb countries. However, more efforts need to be carried out to improve networking and regular updating of information at the local, national and regional levels.

At the international level, UNEP has introduced the Global Environment Outlook (GEO) process to keep under review the global environment through a policy relevant integrated assessment conducted by a network of collaborating centers spread around the globe, including the Arab world. Three collaborating centers were selected from the Arab Region, CEDARE to cover North Africa, and ACSAD and Arabian Gulf University to cover West Asia. UNEP produced GEO-1 in 1997, GEO2000 in 1999, and is now finalizing GEO-3. Within the geographic scope of GEO, the Arab Region is divided between Africa and West Asia. As such, the UNEP Regional Office for West Asia has led an initiative to produce a report on the State of Environment of the Arab World to build on the inputs of the GEO process. The report has been prepared in collaboration with CEDARE, ACSAD, and AGU to be the first integrated report on the State of the Environment of the Arab World. The report was used as a base for an Arab environmental strategy report, Perspectives on Environmental Action in the Arab Region.[241] The Abu Dhabi Declaration made by the Arab Ministers responsible for the environment capitalized on the highlights of the report.

E. ENVIRONMENTAL EDUCATION

Concern of the Arab countries with environmental education dates back to the 1970's and 1980's, but UNCED catalyzed the countries to review, strengthen, and revolutionize environmental education with the objectives to include environmental issues in the regular educational programme; prepare specialized and innovative independent environmental education programmes; or adopt integrated programmes based on the combination of both options.[242] The greater majority of the Arab countries adopted and integrated environmental education in school curricula at the elementary and secondary school levels in the formal education sector as a cross- cutting theme in several courses. Educational institutional structures and frameworks in the region vary from one country to the other, and environmental education as such is being addressed not only in the formal and non-formal sector by Ministries of Education and Ministries of Environmental Affairs, but also by other governmental and non-governmental institutions and organizations

There is concern that environmental education is not addressing the real environmental issues of relevance to the region, perhaps because of the use of translated materials from foreign cultures, and also because of lack of consistency and effectiveness.

Of the key issues to be considered in addressing environmental education at pre-school level is the creation of well-designed and specialized programmes. It is also challenging to incorporate environmental education under the present educational programmes of universities and higher institutions, which are dependent on highly specialized courses. The present formal educational programmes at the varied levels are based on independent courses. Proper perception of many environmental issues requires the integration of knowledge derived from different disciplines that might not be available within specialized courses.

Regional and international organizations such UNESCO, UNEP, CAMRE, ALECSO and others are helping the region to address the issues of environmental education. UNESCO initiatives and programmes emphasizing the interrelations between humans and the environment, including Man and Biosphere (MAB) and Environment, Population and Development (EPD) present varied materials and issues for the region. Through the last decade, there were several regional conferences, seminars, and meetings convened to discuss and develop environmental education in the Arab Region.[243]

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[241] Tolba, M.; Al Kholy, O and K. Sabet, 2001. Perspective of Environmental Action in the Arab World. 2001.
[242] Khattab, A. 1999. Towards the inclusion of Environmental Eduation in the Arab Formal Education. CAMRE/The Arab League, Cairo, Egypt (In Arabic)
[243] UNEP et al., op. cit.

F. RESEARCH AND DEVELOPMENT

Research and development (R&D) is critical for the Arab Region in order to find innovative solutions to problems standing in the way of achieving sustainable development. Unfortunately, the status of R&D is not very positive when compared to other world regions. The only region that lags behind the Arab world is sub-Saharan Africa. The situation is alarming and requires urgent attention.

In 1998, the population of the Arab world accounted for 4.3 percent of the world population producing 3.3 percent of the global GDP. About 3.8 percent of the workforce works in R&D. However, the Arab world is spending 0.2 percent of its GDP on R&D, while the world average is 1.4 percent. The focus on R&D in the region is in the agricultural field, which represents 44 percent of the people working in research. The health sector follows agriculture at 13 percent.[244]

According to a 1998 UNESCO study, the number of scientific personnel increased in Arab countries between 1992 and 1996 at a rate of 6-7 percent per annum, more than twice the rate of population growth. The relevant abundance in R&D personnel is maintained and has, in fact, improved. However, there are significant differences among the capabilities of the Arab countries for R&D, specifically with regard to human and financial capacities, which offer opportunities for concerted efforts to integrate research between national and regional scientific research institutions, not only for regional security but also for regional economic integration.

Scientific output is modest especially when it comes to technology development. R&D personnel are in relative abundance but financial resources constrain their contribution to their own societies. Financial resources, however, represent but one measurable facet of the complex scientific institutional development. In itself, poor institutional development is a clear expression of the low priority accorded to science in governance regimes and society.

It is also important for the Arab Region to advance and develop relevant indigenous technologies and resources more actively. Shifting emphasis from turnkey technological projects to those that require technology transfer and the training of the local labor force should be pursued.[245] This includes moving away from "sunset" industries and technologies that are most common in the region,[246] to those that favor clean production and a skilled workforce.

G. CONFLICTS AND REGIONAL SECURITY

1. Conflicts, Struggles and Wars

The Arab Region has witnessed during the twentieth century, particularly since the beginning of the Arab-Israeli conflict, many conflicts, struggles and wars, which hindered its developmental path, uprooted its stability and drained its resources and energies. These conflicts have also severely influenced its environment, had destructive repercussions and resulted in many human tragedies. The continued occupation of Arab Territories in the West Bank and Gaza Strip, as well as in the Syrian Golan Heights and the South Lebanon is leading to destruction of infrastructures, natural resources and human potential and the illegal utilization of water resources. This is a major obstacle to sustainable development. The civil wars in Lebanon, Somalia, and Sudan, internal struggles in Algeria, Djibouti,

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[244] League of Arab States, op. cit.
[245] A.A. Kubursi, *Sustainable Human Development under Globalization: The Arab Challenge.*" Human Development Studies Series No. 10, Document # E/ESCWA/SD/1999/5, English, United Nations: New York, 1999.
[246] Ibid.

Comoros Islands and the Second Gulf War have had their economic, social and environmental repercussions.

One of the other key problems in the Region is landmines, especially those implanted in North Africa by Germany and Britain during the Second World War, rendering huge areas dangerous and unusable. Landmines unfortunately have also been used in internal conflicts and civil wars in the Region. This weapon has detrimental effects on the environment; it hinders developmental efforts and results in human losses. Not only this, but every injured individual also pays a heavy physical, social and economic price for a lifetime.

Conflicts over the shared water resources are of particular importance in the Arab Region, where nearly 55 percent of renewable freshwater resources originate from outside the Region. The case of the Tigers and Euphrates raise many fears. These fears stem from Turkey relentless tractability in turning down recurrent calls from Syria and Iraq for negotiation to reach a fair resolution of this conflict and its continuous refusal to hold the tripartite committee meeting for this purpose. Furthermore, Israel is using shared water resources quite abusively and reaps off Arab waters.

The continuation of international sanctions imposed on both Iraq and Libya has had a pernicious effect on the economy and environment of the two countries. They also had serious social and health repercussions on the Iraqi people. Another aspect of regional security is related to the growing concern over risks from potential nuclear leakage incidents from nuclear power reactors in Israel. It is necessary that all nuclear facilities in the Middle East be subjected to international inspection.

2. Refugees, the Displaced and Disadvantaged Groups

There are particular challenges that have to be addressed in implementing programmes of reconstruction, rebuilding of social and economic institutions, and reintegration of displaced population groups. Marginalized groups – namely migrant communities, women, children and the elderly – tend to be the most affected during times of conflict. Conflict stricken areas in the region are also the most vulnerable to social and economic shocks.[247]

3. Regional Resource Management

Environmental challenges do not respect political boundaries at the national, regional or global level. As such, international negotiation and coordination are integral to the effective management of shared natural resources. Eco-zone management and shared water resources management is required for promoting sustainable use of regional resources. It is thus important for international and regional organizations to further expand interregional cooperation through capacity building of member states with emphasis on developing more efficient and equitable management of shared water resources and eco-zones and the implementation of integrated water resources management strategies.[248]

H. TRADE LIBERALIZATION AND REGIONALIZATION

1. Trade Liberalization

More than half of the Arab states are now members of the WTO. This has reinforced trade liberalization in the region and has boosted public and private efforts to increase international competitiveness. Growth through economic diversification, export expansion and trade liberalization is now a core development strategy for most countries in the region.[249] However, trade liberalization provides a double-edged sword that allows exporters to penetrate new markets, but only if they are

[247] SDIPD, "Female-headed households in selected conflict-stricken ESCWA areas: an exploratory survey for formulating poverty alleviation policies".
[248] Thematic RT Report.
[249] EDIPD, "EDIPD Contribution to Rio+10".

able to comply with higher environmental and quality standards. Such higher standards are not only being imposed by governments through health and safety regulations, but are also being required by private industry and consumers who increasingly seek compliance with even stronger product standards and process guidelines. There is also the concern that some countries will maintain weak environmental regimes or engage in a "race to the bottom" in order to attract more foreign investment than their competitors, albeit of the less environmentally friendly kind. This requires concerted effort to "level the playing field" and share benefits in order to avoid environmental dumping in less developed countries of the region.

Since the early 1990s, most countries in the region have initiated economic reforms to better adjust to liberalized trade trends and globalization.[250] However, globalization and its implication to the Arab Region may limit or constrain the potential to achieve sustainable development. Therefore, the Arab Region needs to rearrange (reform) its economic and institutional set up to deal with globalization, and to create a Regional Arab block based on the strong cultural, civilizational, social potentials and economic of the Region. The establishment of an Arab economic entity requires strengthening the elements of the Arab Common Market, and seeking regional integration to create a large market for Arab products. It will also support the negotiating position of the Arab countries with other regional blocks and economic blocks, including the WTO.

Poor performance of the external sector seems to persist. There is significant competition from non-regional manufacturers in Arab markets due to trade liberalization and low-cost imports. Trade in the non-oil sector also continues to represent a small share of regional GDP.[251]

The shifting trade balance shows that trade liberalization constitutes a real threat for uncompetitive industry and subsidized agriculture in the region. This is especially true for heavily burdened state-owned enterprises (SOEs) and small and medium sized enterprises (SMEs), which are important sources of employment. Furthermore, as trade barriers and subsidies are removed, environment and health standards are being reinforced both domestically and abroad.[252] Neither agriculture nor industry is prepared to cope with these implications and the cost of modernization,[253] despite the benefits that new markets and access to new technologies and production methods might bring.

What has been found, however, is that the cost of complying with stronger environmental standards is high, but bearable for many export-oriented industries in the region depending on their initial capacity for adjustment. Of course, the cost of adjustment may be lower for larger firms than SMEs due to economies of scale and the scope of investments required. Accordingly, efforts are currently underway to help SMEs meet the challenges of globalization and trade liberalization. This will help SMEs to maintain employment levels, compete domestically and even expand into export markets.

Finally, earnest efforts are being made to facilitate trade and integration at the regional and global levels.[254] Most governments now work with the private sector in a cooperative manner.[255] Support institutions have been established throughout the region to provide business information and support services, e.g., EU business centers established in Egypt, Jordan, Lebanon and Syria. Trade Points in Egypt and the Trade Information Center in Lebanon have also devised useful databases for entrepreneurs that are accessible through the Internet.[256] Reports are also increasingly available regarding ways to assess and surmount trade costs related to complying with stronger environmental

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[250] ESCWA, *Review of Industrial Strategies and Policies: Preparing for the Twenty-First Century*, forthcoming from ID/SIPD, 2001.
[251] EDIPD, op. cit.
[252] Thematic RT Report.
[253] Ibid.
[254] EDIPD, op. cit.
[255] Thematic RT Report.
[256] ESCWA, *Review of Industrial Strategies and Policies: Preparing for the Twenty-First Century*, forthcoming from ID/SIPD, 2001.

standards.[257] Furthermore, free trade areas are proliferating in the region, equipped with new infrastructure to facilitate the manufacture and transfer of goods to shipping points. Nevertheless, more entrepreneurs need to be informed about these programmes and the benefits they can bring.

2. *Regional Integration*

Regional approaches are increasingly being advanced as a means to reap the benefits and face the risks of globalization[258] and the challenges it poses for sustainable development. Indeed, regional integration is increasingly being championed as the means by which developing countries can avoid falling behind in the development process.[259] While regional economic integration is progressing through the AFTA, particularly in non-oil sectors, other initiatives are also underway to promote regional integration. Of particular note are increased cooperation in regional infrastructure development (i.e., transportation and electricity networks) and the harmonization and approximation of regulatory standards and procedures. These efforts serve to facilitate trade and increase regional competitiveness. Regionalization thus supports sustainable development through efficiency gains and cost-savings achieved by the smoother production and transport of goods, services and people. However, progress remains limited in assessing and managing natural resources and environmental pollution from a regional perspective.

3. *Harmonization and Approximation of Environmental Standards*

While regional harmonization and approximation of environmental standards and policies remains limited, there has been a significant increase in awareness among governments and the private sector regarding its benefits. Problems persist, however, because of differing perspectives regarding the laxity or rigidity of environmental regimes in Arab Countries. Furthermore, some countries still fear that a strengthening of environmental laws and enforcement will dissuade entrepreneurs from investing in their country in favor of other countries in the region requiring less stringent environmental performance.[260] This supports efforts for the harmonization of environmental standards and policies, which can level the playing field for investment and economic development in the region. Strengthening monitoring and enforcement is an important component of this effort.

Discussions supporting regulatory harmonization in the region extend to many sectors related to trade, environment and sustainable development. For instance, harmonizing testing and certification of export products may involve the harmonization of environment and health standards, as well as the procedures by which goods are handled and examined. Regional negotiations and efforts to unify and technologically modernize customs procedures will also yield efficiency gains and environmental benefits. These include reducing atmospheric emissions caused by lengthy storage of refrigerated goods, energy used in the re-transport of rejected imports and waste generated by the destruction of damaged or perishable items no longer consumable after customs delays. Regional expert group meetings attended by governments and private stakeholders are also being convened to address the harmonization of regulations related to certification and accreditation, customs procedures, the transport sector, the energy sector, major agricultural inputs (e.g., pesticides, fertilizers and seeds).[261]

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[257] See Bruce A. Larson, "The Impact of Environmental Regulations on Exports: An Overview and Synthesis of the MedPolicies Case Studies," in MedPolicies Initiative, Mediterranean Environmental Technical Assistance Program, *Trade and Environment and International Competitiveness in the Mediterranean Region: Selected Case Studies*, 2000, Beirut: Harvard Institute for International Development, 2000, and the *Eco Trade Manual: Environmental challenges for exporting to the European Union*, 1998 produced by the Center for the Promotion of Imports from developing countries, Danish Import Promotion Office, Norwegian Agency for Development Cooperation, Swiss Office for Trade Promotion, PROTRADE/GTZ and Swedish International Development Cooperation Agency.

[258] ESCWA, "ECOSOC Promotes Regional Integration as a Prerequisite for Globalization," based on United Nations Economic and Social Council meeting in Geneva, 16-23 July 2001, article posted at http://www.escwa.org.lb, downloaded 5 September 2001.

[259] See Section II, Part A: "Theme on interregional cooperation: regional perspectives on globalization: an opportunity for catching up or a risk of falling behind in the development process," in Economic and Social Council, *Regional Cooperation in the economic, social and related fields: Report of the Secretary-General*, Document #: E/2001/18, English, 16 May 2001.

VII. FINANCING FOR SUSTAINABLE DEVELOPMENT

The availability of sufficient financial resources is a basic requirement for achieving sustainable development. Unfortunately, financing for sustainable development remains limited for many Arab countries, mostly because of the debt burden. Furthermore, while a variety of financial instruments and institutions have been strengthened over recent years, coordination and oversight of programmes remain limited.

A. REGIONAL CONTEXT

During the 1980s, most governments in the region increased development outlays and amassed record deficits, which were financed by drawing on foreign reserves and issuing domestic debt instruments during the 1990s.[262] Apart from the oil rich Gulf States, this resulted in a significant debt burden for most countries of the region, thus limiting the ability of governments to invest in basic services and infrastructure while protecting natural resources.[263] Furthermore, since most countries in the region have their currencies pegged to the US dollar, its appreciation had positive effects for oil-exporting states, while worsening the debt-servicing burden for debtor countries.[264] Regional conflicts and unemployment have also forced military expenditures and expanding public administration payrolls to consume a significant share of the national purse,[265] despite marginal growth in GDP. The financial disequilibria that ensued forced many countries to undertake major economic reforms and structural adjustment programmes during the 1990s that were often not socially or environmentally sensitive,[266] and tended to exacerbate income inequalities and poverty. These programmes also achieved mixed success in controlling national debt.

B. FINANCIAL INSTRUMENTS AND MECHANISMS

In order for the Arab countries to secure the financial resources needed for sustainable development projects, alternative financing will have to be pursued in order to support these needed investments. A number of financial instruments and mechanisms used in the region are highlighted in this section.

1. Sustainable Development Funds and Fundraising

Over the last decade, some countries in the region have established funds to support environmental protection (e.g. Environmental Protection Fund, Egypt). Other countries created social and economic development funds (e.g. Egypt, Saudi Arabia, and Yemen). Furthermore, following the ratification of MEAs, several governments in the region established committees to oversee the implementation and financing of international commitments. On the international level, the Global Environment Facility (GEF) has supported several programmes in the region in support of Agenda 21 implementation in areas related to international waters, biodiversity, and climate change. However, on the basis of past experience, there is a need for new and additional funding at the national and regional levels to be incorporated into the national sustainable development strategies.

2. Loans and Micro-Financing

Funding for small and medium-sized enterprises remains particularly limited since commercial banks tend to maintain an elitist approach to their loan portfolios. Government and private commercial

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[262] Heba Handoussa, Dina El Halaby and Heba Abou Shnief, "Mobilization of Domestic Financial Resources for Development: Executive Summary," paper presented at *ESCWA Regional Meeting on Financing for Development*, 23-24 November 2000, Beirut, Lebanon.
[263] Thematic RT Report.
[264] Handoussa et al., loc. cit.

banks in the region also do not require the completion of environmental impact assessments as part of their loan approval process, with environmental considerations only being taken into account when local funds are partnered with those from international financial institutions.

Alternatively, micro-financing – the provision of financial services (credits, deposits, savings) to the entrepreneurial poor[267] – has achieved mixed success. Despite growth, the financial sustainability of micro-finance programmes remains tenuous, particularly in small markets and with programmes that target specific beneficiaries. This is because challenges facing micro-financing include social, political and religious attitudes, as well as negative perceptions that the activity serves the informal economy.[268] A gender imbalance in micro-finance lending has also been identified.

3. Privatization and Private Sector Participation

Structural economic reforms encouraged privatization as a means to raise funds for sustainable economic development. Private sector participation in the provision of environmental services and the use of licensing fees have also become more common. A key issue of concern is how to ensure access to public and social services by poor and marginalized communities while allowing private sector service providers to secure reasonable profits. This has created social-political obstacles for regional governments seeking to privatize water, sanitation and transportation services. Another challenge is how to handle environmental liability tied to past pollution caused by enterprises identified for privatization.

4. Foreign Direct Investment (FDI)

The Arab share of global foreign direct investment (FDI) averaged one percent in the 1990s, against a share of two percent of world GDP. Most FDI inflows were concentrated in six Arab countries: Egypt, Jordan, Morocco, Oman, Saudi Arabia and Tunisia, accounting for more than 83 percent of Arab FDI stock in 1998; inflows into Egypt and Saudi Arabia alone represented 63 percent of the total. Most Arab FDI went to the oil sector (Oman), petrochemicals (Saudi Arabia), tourism (especially in Egypt), and textiles, metals and minerals (Egypt, Jordan, Morocco and Tunisia).[269] FDI not only provides funds for economic and industrial development, but it can also generate technological spillovers from investors acquainted with new technologies. More preparation needs to be done to encourage more environmentally-friendly foreign investment into the region.

5. Tax Reform and Savings

Falling tariff revenues caused by trade liberalization and economic restructuring require that governments identify alternative means to finance the national debt, support government expenditures and pursue sustainable development. While indirect taxation is already prevalent throughout the region, individual income taxes (which mostly comprise a small share of revenues) are now being viewed as an alternative revenue stream.[270] This might have an adverse impact on savings, however, which is already very low in Arab Region compared to other developing regions.[271] Tax reform should also seek to adjust market signals through graduated tariffs to encourage sustainable behavior (e.g., water and energy conservation), rather than impose flat rates that promote excessive consumption.

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[267] ESCWA, *Survey of Economic and Social Developments in the ESCWA Region, 1998-1999*, Document #: E/ESCWA/ED/1999/5, English, New York: United Nations, 1999.
[268] Ibid.
[269] Ali T. Sadik and Ali A. Bolbol, "Mobilizing Capital for Arab Economic Development with Special Reference to the Role of FDI," paper presented at *ESCWA Regional Meeting on Financing for Development*, 23-24 November 2000.
[270] Handoussa et al., op. cit.
[271] Ibid.

6. *Debt-for-Nature swaps and other instruments*

Debt-for-nature swaps have been another constructive way for Arab governments to secure financing for sustainable development while reducing their debt burden. Jordan has taken advantage of this mechanism and is currently negotiating another swap with the assistance of the International Union for the Conservation of Nature (IUCN).[272] Debt forgiveness and limits on public expenditures for debt financing – particularly for Highly Indebted Poor Countries (HIPC) such as Yemen – are also being touted as alternative means for securing government allocations for sustainable development.

C. FINANCIAL INSTITUTIONS

Regional and international financial institutions have continued to provide important levels of financing for sustainable development projects. Aid provided by bilateral donors has also been significant, although its level has been decreasing in recent years.

1. *Regional Development Banks and Aid Donors*

Several regional development funds and institutions provide significant financial assistance to support the implementation of National Sustainable Development Strategies (NSDSs). These include the:

- *Arab Fund for Economic and Social Development* (AFESD) – which offers financial and technical assistance to Arab states, allocated over US$ 1.19 million to national and regional projects in 1999.[273] Environmentally related projects addressed issues as varied as water gathering and distribution, solid waste management, biological pest control, etc.

- *Kuwaiti Fund for Development* (KFD) – which provides loans and grants to all parts of the world, had allocated over US$ 326.9 million to the region by 2000.[274] Yemen has been a significant recipient of KFD assistance, mostly for agricultural projects.

- *Islamic Development Bank* (IDB) – which was established by the Conference of Finance Ministers of Muslim Countries to provide loans and technical assistance and training to member countries, and also encourage private business development and trade.

Saudi Arabia, Kuwait and United Arab Emirates are also substantial aid donors and have supported many development projects in the Arab Region through bilateral assistance. These include projects to rehabilitate and improve the efficiency of water, electricity and transportation networks. Kuwait annually contributes five percent of its GDP to foreign aid, placing it near the top of donor countries based on contribution as share of GDP.[275] The region also continued to receive important financial and technical assistance for sustainable development from bilateral aid institutions, notably from Europe, the United States and Japan. International financial institutions (e.g. World Bank, European Investment Bank) and regional grant facilities (e.g. World Bank, Mediterranean Environmental Technical Assistance Programme, Mediterranean Commission for Sustainable Development) also provide important technical and financial assistance to various countries in the region in support of sustainable development. Nevertheless, international donors have not lived up to the expectations raised at the Earth Summit. The volume of development assistance has declined and several

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[272] Ruba Saqr, "Government, IUCN, UNDP to Launch Debt for Nature Swap," *Jordan Times*, 10 October 2000, http://www.globalpolicy.org/socecon/ffd/debt/jordan.htm.

[273] Arab Fund for Economic and Social Development, "Technical Assistance Approved during 1999," http://www.arabfund.org/techasst.htm#table3.

[274] Kuwaiti Fund for Development, "Geographical Distribution of Grants and Technical Assistance up to 31st August 2000," http://www.kuwait-fund.org/books/e-Activity/e-Act5.htm, downloaded 29 September 2000.

[275] The Kuwait Information Office (Washington, DC), "Kuwait Country Profile: Kuwait's Foreign Policy," http://www.kuwait-info.org/html/foraffairs.html#foreignpolicy.

developed countries, for various reasons, have failed to live up to their commitments to assist less developed countries, including those in the region.[276]

2. *NGOs and Non-Governmental Partners in Sustainable Development*

NGOs, community-based organizations (CBOs), universities, think tanks and religious institutions can provide valuable technical and financial resources to compliment government spending in support of sustainable development. If well integrated in the NSDS planning process, NGOs can solicit funding from charitable groups and foreign governments through avenues not accessible to governments. Coordination and complementarity of governmental and non-governmental activities in support of sustainable development is thus essential in reduce the financing gap. This approach, for instance, is being effectively used to support sustainable development initiatives in Tunisia.

D. COORDINATION, COMPLEMENTARITY AND OVERSIGHT

Poor coordination between funding institutions and limited complementarity between funded programmes has limited the effectiveness of grants and loans secured to support sustainable development.

In an effort to improve complementarity and coordination of programming in the region, several international, regional and national donor institutions joined forces to establish the Coordination Secretariat of Arab National and Regional Development Institutions. The secretariat meets periodically to discuss planned and ongoing development projects and to streamline operational procedures between member institutions. Members of the coordination group include the Abu Dhabi Fund for Development, Arab Bank for Economic Development in Africa, Islamic Development Bank, Kuwait Fund for Arab Economic Development, OPEC Fund for International Development, Saudi Fund for Development, and AFESD, which maintains the Secretariat.[277] Nevertheless, challenges to regional coordination between donor institutions and national coordination between donor institutions and national governments continue to plague effective financial assistance to beneficiary countries in the region. The main challenges to effective sustainable development financing and donor assistance to the region thus involve:

- Differences in geographic coverage;
- Differences in institutional mandates;
- Differences in approval procedures and project timelines;
- Potential conflicts between capacity building grants and loans for development; and
- Poor communication and coordination between donor organizations at the international, regional, bilateral and national levels.[278]

Finally, one of the most important and neglected aspects of financing for sustainable development in the region concerns the lack of oversight and monitoring of allocated project funds. Countries in the region have no comprehensive system for assessing the effectiveness of financial instruments and mechanisms in moving towards sustainable development.

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[276] Thematic RT Report.

[277] For more information, see ESCWA, *Sustainable Development Planning in the ESCWA Region*, forthcoming from ECU/ENRED, 2001, p. 88, and the Arab Fund for Economic and Social Development website at http://www.arabfund.org.

[278] For a more detailed assessment of challenges for effective financing see ESCWA, *Sustainable Development Planning in ESCWA Member States*, forthcoming from ECU/ENRED.

VIII. PLATFORM OF PRIORITIES FOR ACTIONS AND MEANS OF IMPLEMENTATION

The regional consultation process in preparation for the *World Summit for Sustainable Development* involved the participation of government officials, including ministers of economy, environment and planning, parliamentarians, eminent persons; national and regional NGOs, the private sector including trade unions, academia including scientific and technological community, regional youth organizations, regional women's organizations, development banks and Arab funding agencies, local authorities in support of Agenda 21, industry and farmers, media and regional and international organizations serving the region.[279] Regional participants identified the major sustainable development challenges facing the region during this process. In doing so, public and private stakeholders also took note of the *Abu Dhabi Declaration* issued by the Council of Arab Ministers Responsible for the Environment (CAMRE) in February 2001 and approved by Arab leaders in March 2001, which outlines Arab perspectives on environmental action and re-established regional commitment to regional sustainable development efforts well into the twenty-first century.[280]

The Abu Dhabi Declaration on Perspective of Arab Environmental Action in the Arab Region not only specifies elements of the strategy of Arab environmental action in the twenty-first century, but is also a crucial and fundamental step for highlighting the priorities of action for the Arab Region to achieve sustainable development. The declaration indicates in item one that "There is an urgent need for alleviation of poverty and improvement of living standards", in item three/6 "Capacity building awareness and institutional development;" in item three/4 "Adopting the 'Cleaner Production' strategy in its comprehensive sense". In item three/ 7&8 "achieving a qualitative jump in the efforts of scientific research and technology development institutions," and "indigenization of water desalination techniques." Finally, in the fifth section (c), it stressed, "the necessity of securing permanent sources of funding."[281]

The outcomes of these consultations and statements resulted in the following platform of priorities. This platform lists the key challenges that regional governments and stakeholders will seek to address in formulating and implementing sustainable development strategies over the coming years. This platform also provides the international community with a well-defined framework within which technical and financial assistance can be best focused to support regional progress towards sustainable development.

A. POVERTY ALLEVIATION AND SOCIAL INTEGRATION[282]

Poverty is considered as the main limiting factor in achieving sustainable development. Curtailing poverty requires long-term strategic planning and creative approaches that may go beyond traditional tools of poverty reduction.[283]

Poverty alleviation is a necessary component of human development.[284] However, poverty alleviation remains a significant challenge for many countries of the region, and thus a major impediment to achieving sustainable development.[285] Social integration must be part of the equation to resolve the poverty problem to ensure that social, economic and environmental benefits are equally shared. It is thus imperative to strengthen political commitments and efforts to implement sustainable development policies and enhance the quality of life for all sectors of the population, with special emphasis on

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[279] Thematic Roundtable, Stakeholders Roundtable, Regional NGOs Forum, Industry Regional Forum, JCEDAR Meeting, CAMRE Meeting, Regional PrepCom Meeting.
[280] Thematic RT Report.
[281] CAMRE, *Abu Dhabi Declaration. Perspectives of Arab Environmental Action*, Abu Dhabi, UAE, 3 February 2001.
[282] Stakeholders Roundtable.
[283] Ibid.
[284] CAMRE, *Abu Dhabi Declaration*, loc. cit.
[285] Thematic RT Report.

vulnerable groups such as women, children and the disabled.[286] The process of reaching this goal should seek to:

- Stabilize population growth;
- Improve access and quality of education;
- Restructure technical and vocational training to fill in gaps in the labor market;
- Supply and train communities in information technology to facilitate knowledge transfer; and
- Provide equitable access to public services (water, sanitation, etc.) among all social groups.

Global efforts should also be made to ensure that less developed countries are able to provide basic social services to local communities, especially in rural areas, to improve educational and health services, and to empower women as resource managers at the community level.[287]

1. Actions at the National Level[288]

Poverty eradication needs the development of programmes aimed at social welfare, illiteracy eradication, promoting employment and equality of opportunity, and protecting the environment. Specific programmes are required for capacity building to promote income generation for the most vulnerable groups (e.g. women and children). The poor should be empowered to be active actors in developing opportunities to eradicate poverty. They should also be provided with free access to basic public services such as safe drinking water, sanitation, health, and elementary and technical education.

Small and medium enterprises should be supported and promoted to assist in creating jobs. It is also important to give attention to the informal sector as a major contributor to poverty alleviation.

Present economic and social policies do not provide adequate assistance to the poor. They should be streamlined to support low-income groups, such as income-based taxation systems, micro-financing and mechanisms for better distribution of wealth. Cultural and religious values provide an ethical and moral obligation to support the poor. There is also a need to improve resource management to provide for the needs of the poor. Focus should be on the development of rural areas to improve shelter, infrastructure, services, investment and job creation. Private developers and investors should be encouraged to invest in low-income housing.

Good governance is essential to eradicate poverty, especially combating corruption and improving accountability and transparency.

2. Actions at the Regional Level

There is a need to develop regional strategies and programmes to address poverty. The Arab and Islamic Development Funds, regional charities, Arab-Arab regional investment groups should be encouraged and reinforced. This includes improvement of investment conditions, soft loans and micro-financing initiatives to empower the poor, capacity building and greater access to technology.

3. Actions at the International Level

All UN organizations should adopt poverty as an issue of paramount concern. UNDP and other UN agency programmes aimed at addressing poverty should be strengthened. International aid programmes should also be developed to include poverty eradication and the involvement of civil society. International soft loans should be encouraged and the debt burden reduced. Economic embargoes lead to further deterioration of living conditions of the poor and these should be removed.

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[286] Thematic RT Report.
[287] Ibid.
[288] Stakeholders Roundtable.

B. DEBT BURDEN[289]

A combination of internal and external factors has led many countries in the region to fall into the debt trap. Economic growth in these countries is hampered by this burden as substantial financial resources are diverted to servicing external debt instead of contributing towards sustainable growth and development.

1. Actions at the National Level

Governments and the private sector should undertake feasibility studies prior taking out loans and ensure rational borrowing and efficiency in the management of debts. The historical perspective of borrowing and debts needs to be studied and lessons should be learnt from previous experience. It is important to ensure that money from loans is used for sustainable development programmes and projects, transparently and with full accountability. Countries must ensure that the benefits derived from any easing of debt burdens are re-invested in sustainable development activities. Economic performance of governments should be improved, through waste minimization and sustainable management of resources.

2. Actions at the Regional Level

Arab Countries are urged to minimize resorting to debt, and if necessary to seek national and regional sources rather than depend on foreign sources. The region needs to develop experience and improve management to deal with debt issues. Debt should address joint programming and joint investment projects should be investigated to optimize the use of loans. The Arab countries needs to investigate debt for trade swaps within the region.

3. Actions at the International Level

International creditors are urged to ease or write off debt on the basis of greater transparency, better governance and more appropriate institutional set up in the countries of the region. Options to be considered include debt swaps for environment and social development with focus on poverty eradication, debt reduction, debt waiving, and extensions of debt repayments. Debts of poor countries should not be used as bargaining chips for political pressure.

C. PEACE AND SECURITY[290]

Peace and security has had and will continue to have significant impacts on the progress to achieve sustainable development in the region. The continued failure to resolve the long-standing problems, specifically the Arab-Israeli conflict is a major limiting factor in the region.

1. Actions at the National Level

It is essential for sustainable development to bring social and political stability to the countries of the region, to address internal problems, to achieve equity in wealth and resource distribution, and to respect the rights of citizens regardless of social or religious beliefs. People should be secure in their societies from prosecution based on their beliefs or their political stands. Peace and security based on the respect of human rights is a prerequisite for national security.

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[289] Ibid.
[290] Ibid.

2. *Actions at the Regional Level*

Achieving regional stability, peace and security is required to advance sustainable development in the region and to reduce people displacement and migration. The peaceful settlement of the Bahrain/Qatar dispute through the International Court of Justice provides a model that should be replicated in settling other conflicts, disputes or tensions in the region.

3. *Actions at the International Level*

A number of key areas regarding peace and security have been identified as requiring the support of the international communities and the UN system. The world community must be called upon to take a proactive role in the implementation of the UN resolutions on the Arab-Israel conflict, and to achieve peace and security in the region.

The international community should join to fight terrorism through the UN system, through the negotiation of an international convention to combat terrorism. It is also affirmed that struggle against occupation is not in any way an act of terrorism and is legitimate according to the UN charter. Implementation of international agreements is essential to ease the tension in many areas of the world and to create an enabling environment for peace based on the respect of national sovereignties and human rights.

Countries responsible for the loss and damage of natural resources during wars should be accountable for the cost of restoration; similarly those that were responsible for laying land mines should be responsible for their removal. The international community and the UN system should intensify their efforts to eliminate nuclear and other weapons of mass destruction from the Middle East and North Africa in order to declare the region a free zone from these weapons, and to continue these efforts globally. The international community is also urged to provide support to refugees in the region resulting from instabilities, conflicts, and environmental insecurity as well as adequate financial resources to deal with environmental damages caused by refugees.

D. MANAGING POPULATION[291]

Human resources can be an asset, and appropriate preparations should be made in infrastructure for its support, including investment in health, education, training etc. Fast population growth rates and imbalances in population distribution have resulted in increasing demands and pressures on finite natural resources and limited urban services. With the exception of Gulf countries, the population growth rate is imposing a problem to the countries of the region. Census and other social statistical data should be used in master planning, and linkages between population growth and available natural resources should be considered. Population needs to be managed intelligently in order to mobilize it towards achieving sustainable development.

1. *Actions at the National Level*

Population policies should be developed, including family planning and awareness with respect to impacts of unsustainable population growth. Emphasis should be given to women's development and childcare. Religion does not necessarily preclude family planning, and this should be reflected in religious awareness. Illiteracy has to be addressed as a critical factor reflecting on population growth rates.

Agricultural planning, creation of job opportunities, improvement in services in rural areas and other appropriate measures should be taken to discourage rural-urban migration.

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[291] Ibid.

2. *Actions at the Regional Level*

There is a need to establish regional population management policies addressing the various needs of the countries of the region, including the issue of movement of labor. More job opportunities should be provided for trained Arab manpower in the region.

3. *Actions at the International Level*

The international community should support family planning programmes and encourage free intra-regional movement of labor and the protection of the rights of expatriate labor.

E. EDUCATION, CAPACITY BUILDING, RESEARCH AND TECHNOLOGY TRANSFER[292]

The region needs to invest in capacity building and empowering its young population. Sound education, proper training, and proper management of human resources are required to produce the type and quality of human capital needed to fuel sustainable development. Scientific research and technology development should address the priorities of the region, and serve to achieve sustainable development.

1. *Actions at the National Level*

Arab Countries are encouraged to review and develop their educational and training strategies and policies and to commit to a broad-based valid action plan to improve the quality of human resources and invest a proportion of the Gross Domestic Product (GDP) in improving technological research and education. Appropriate facilities should be established for children with special needs, including special programmes for rehabilitation and care of handicapped people.

Education and training should be redirected to fulfill the demands of the market and should be streamlined with sustainable development needs. Education should be looked at as a societal business not only as a government business, in which government, civil society and private sector determine the needs of the society and the job market, and share the responsibilities. The concept of sustainable development should be incorporated into education at all levels, and the differing needs of rural and urban areas should be considered. The private sector, civil society and the media should be encouraged to contribute to the efforts to eliminate illiteracy and to assist in developing innovative methods and training programmes.

Academic and research strategies need to be directed to improve the linkage between research focus and the needs of sustainable development, to conduct applied research in priority areas and to allow more freedom in academic research. The establishment of National Councils for Sustainable Research and National Councils for Education are encouraged. The development of indigenous technologies is important to support sustainable development. The private sector in the region should take a proactive role in research and development through specialized units or through the support to academic and other research institutions. Such expansion of the research base would discourage brain drain.

The Arab countries should encourage Cleaner Production strategies, encourage research, transfer of appropriate but not necessarily the most advanced technology, and linking research and development to market demand in order to provide the appropriate technologies at reasonable price.

Information technology for sustainable development should be harnessed, with improved access and better training. Information should be made more readily available in the public domain.

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[292] Ibid.

2. *Actions at the Regional Level*

Regional institutions should play a key role in transferring experience, technology and best practices and assist in capacity building through the exchange of training programmes, experience and information between the countries of the region.

To advance scientific research to solve problems associated with the applications of sustainable development, it is necessary to enhance cooperation between scientific research centers and universities and to establish networks and improved linkages between national and regional researchers and research projects. Cooperation in priority areas, such as water resources development (including desalination), biotechnology, renewable energy, and the development of indigenous technologies should be encouraged.

There is a need for developing regional strategies and cooperation for investment in indigenous technology, transfer and adaptation of appropriate technology and to create an atmosphere for reversing the brain drain.

It is proposed that regional technology centers be entrusted with the process of technology adaptation and development. The development of a regional policy towards WTO negotiations with regard to technology transfer and TRIPs is also necessary.

3. *Actions at the International Level*

The international scientific community, donor agencies and concerned UN organizations are called upon to provide broad-based support to the academic and research institutions in the Region to develop their programmes and capacity building, especially in information technology. Of special emphasis to the Region is funding of research and development programmes for young researches and support to the technical training of youths to qualify them for local, Regional, and international markets.

Linkage with the international scientific and research community is encouraged, especially in the fields of water desalination, solar energy and information technology. It is of prime importance to create links between national and regional research and international research activities.

Developed world and relevant UN organizations are urged to take a more proactive and more effective role in technology transfer and training to countries of the Region.

Appropriate technology transfer to the countries of the Region should be a prerequisite to the implementation of MEAs, to ensure that the relevant technology is available.

F. SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

1. Food and Water Security[293]

Water scarcity, land degradation and food security represent the major challenges in the Arab Region. The three issues are interdependent and jointly can significantly influence biodiversity, population policies and security in the region.

a. *Actions at the National Level*

The Arab countries of the region are encouraged to adopt integrated water resources management, including demand management approaches. This requires coordination and cooperation between departments/agencies dealing with water issues. Countries are also encouraged to develop renewable

[293] Ibid.

and non-conventional resources, including harvesting of rain and fog water, exploring and developing deep groundwater, water recycling and water desalination.

Arab Countries need to optimize and rationalize the use of water resources by reallocating water to higher value uses, growing water efficient crops, addressing the real value of water in all sectors by applying cost recovery of investment in water projects and increasing the efficiency of irrigation through technical improvements. The use of expert farm management is also important to maximize land productivity and efficiency in the use of irrigation water.

Stakeholders should be encouraged to participate in water management through public awareness campaigns, participatory programmes for stakeholders and local communities and community based water associations. Rationalizing water consumption should also be encouraged. Concerned authorities, with the help of other stakeholders, are also encouraged to extend efforts to rehabilitate steppe areas, marginal lands and the areas of irrigated and rainfed agriculture, and expand the establishment of protected lands to allow the restoration of natural condition and biodiversity.

There is a need to intensify efforts to develop water and land related technologies, specifically for irrigation and water desalination using solar energy technologies. Pollution control measures, including integrated programmes of pest management and control of chemical pollution, should be established and enforced to protect water resources.

Capacity building and improvement of institutional set-up are needed to effectively manage land and water resources, and protect biodiversity. Integrated social and economic land and water policies conducive to the rational use and development of land and water resources should be developed. Financing schemes should be developed to secure the funding necessary for the management of water resources and to implement water investment projects, considering cost recovery through services provided and public fees for wastewater treatment.

b. Actions at the Regional Level

Water, land resources and food security should be addressed within a regional framework through the development of a unified Arab strategy and alternative policies aimed at regional integration, especially agricultural production and trade policies. This should include the sustainable use of shared water resources (including aquifers), the activation of agreements between Arab countries concerning the distribution of agricultural products in terms of a "food integration" strategy and the unification of water legislation and standards.

To address the food security issue, it is necessary to promote regional investment projects that take into consideration the comparative advantages of the countries. The establishment of the Pan-Arab Free-Trade Area and the removal of tariffs and non-tariff barriers would encourage trade in food and agricultural products in the region. Food security in the region is connected to peace, security, and political stability, which countries of the region should continue to strive to achieve.

The Arab countries are urged to support regional Arab action plans regarding selective agriculture in suitable zones, determined by climate and resources (land, water and labor), and to establish regional mechanisms to conserve and rationalize water consumption.

Academia, research institutions, and regional organizations should accord food and water a top priority in the academic and research scheme and encourage, for example, cooperation to develop selected seeds that are resistant to drought, salinity and increased productivity. The region should support the role of specialized regional centers and organizations in the field of research and development and direct them to serve integrated development programmes including the utilization of solar energy in the field of water desalinization to be an indigenous technology developed by the Arab Region.

Genetically modified organisms should be considered carefully by establishing regional bio-safety committees, and food safety in general should be ensured in both locally produced and imported food. It is also important to establish national and regional genetic banks to protect the region's biodiversity and property rights, especially for the origins of wild relatives of food and fodder plants originated in the region.

c. *Actions at the International Level*

Of the key proposals for actions emphasized at the international level are respect of the historical rights of riparian countries of shared water resources (rivers basins, aquifers, etc.), cooperation among those countries in the management and protection from pollution of shared resources, including the development of regional strategies, master plans, and mechanisms for joint implementation.

The Arab regional organizations, the UN and other international organizations are requested, to provide further technical assistance in capacity building, to assist in developing integrated water management policies and to strengthen water resources institutions.

2. Land Degradation (with emphasis on desertification)

a. *Actions at the National Level*

The Arab countries of the region should develop programmes for the rehabilitation of degraded land including meadows and forests, and develop national desertification strategies and action plans in order to implement appropriate programmes to combat desertification. They also need to allocate more resources, initiate innovative solutions in support of land users in rural communities to deal with new global changes and overcome the constraints faced by the poor, marginalized and disadvantaged, in particular women, indigenous people and small farmers.

In order to understand and combat desertification, the Arab countries need to set programmes to monitor land resources using modern technologies, such as remote sensing and GIS.

The Arab countries are urged to comply and implement acceded international conventions and Multi-Lateral Environmental Agreements (MEA) related to land resources, specially the United Nations Convention on Combating Desertification (UNCCD), as instruments of sustainable development by integrating them fully into national and regional socio-economic development planning, in coordination with the relevant regional and international agencies.

b. *Actions at the Regional Level*

There is a need to strengthen the activities of regional organizations in the Arab Region to implement the UNCCD and the harmonization and reconciliation of policies, strategies and programmes for land use, combating desertification and integrated ecosystem management. It is also important to establish regional programmes to monitor desertification based on scientific research and the use of modern technologies.

c. *Actions at the International Level*

Countries of the region urge the Global Environment Facility (GEF) to allocate financial resources and establish mechanisms to support national and regional programmes to combat desertification. They also call upon the international community to support national and regional programmes to combat desertification, and to protect biodiversity and agro-biodiversity.

3. Marine and Coastal Zones

a. Actions at the National Level

The Arab countries should adopt an integrated approach to address coastal and marine resources issues, including the adoption of ICAM for the sustainable development of coastal and marine environment, increasing awareness, strengthening cooperation and integration between institutions and with stakeholders, and implementing the provisions of the United Nations Convention on the Law of the Sea (UNCLOS). Securing financial and technical resources is of paramount importance to implement the activities of integrated management.

It is important to develop management plans and mechanisms for sustainable management of living marine resources, including fisheries and aquaculture at national and regional levels, and to take measures to mitigate pollution from land-based activities, e.g. development of waste treatment capabilities, and rehabilitation of damaged habitats.

There is a need to encourage research and development for sustainable development of coastal and marine areas and resources, and to expand monitoring, surveillance and assessment. It is also important to support national and regional stock assessment studies.

b. Actions at the Regional and International Level

The Arab countries should promote inter-regional cooperation in the protection of the marine environment, including regional contingency planning and minimization of navigational risks. They also are urged to cooperate with the Regional Seas Action Plans to implement the strategic action programmes for the protection of the regional seas. Marine protected areas should also be regionally considered and identified for protection.

It is of paramount importance to implement the Global Plan of Action (GPA) for the Protection of the Marine Environment from Land-based Activities at the regional level with a view of eliminating sewage releases in the coastal and marine environment and control of other sources of land based pollution.

4. Mountains and Forests

a. Actions at the National Level

Countries of the region with significant mountains and forests should formulate a strategy or action plans for their sustainable management and establish a policy of replanting, improving forestry management conditions, integrating trees in urban and tourist developments, and setting up areas to safeguard ecosystem integrity. Formulating such strategies or action plans requires an understanding of their types, complexity, clear delimitation and distribution. Essential elements need to be distinguished, including: intrinsic features of physical environment, climate change, factors of deforestation, skills in forest management, scarcity of forest resources, deep-rooted traditions and human impacts, economic forces and political events. Nevertheless, success will not come from compulsory exclusion. There must be alternative sources of income to people relying on natural forests. The major solutions for forest problems in the region include reforestation of the original and more prosperous areas, and afforestation of multipurpose forests, that can be used for grazing, wood production and other traditional uses. Establishment of multipurpose forests will diversify the outputs, an important asset to avoid overuse of one-purpose forest.

b. Actions at the Regional Level

In order to implement Chapter 13 of Agenda 21 regarding the sustainable development of mountains in the region, it is important to move mountain issues higher on the regional agenda and to increase

regional awareness of the global importance of mountain ecosystems. The International Year of the Mountain (2002) provides a unique opportunity for such an action.

c. ***Actions at the International Level***

At the international level, research should be carried out to identify best practices in watershed management in mountain areas, sustainable mountain development guidelines and to prepare a framework for the proposed Global Plan of Actions for Mountain Ecosystems.

5. Biodiversity

a. ***Actions at the National Level***

Biodiversity conservation and protection efforts should be considered in an integrated approach for habitat diversity, species richness and genetic materials within species. Conservation programmes need to cater for these facets. Protection of critical sites and allocating national reserve parks are urgently needed.

There is a need to review and strengthen national strategies (or develop them where lacking) for the conservation and protection of biodiversity, and to create biodiversity information systems, which may enable decision-makers to make better judgments, planning and implementation of development projects. Gene banks are also necessary for the protection of endangered species and preserving the property rights of species originating in the countries of the Arab Region.

It is anticipated that within the framework of implementing the programmes of the Convention on Biological Diversity (CBD), knowledge on protective measures for various components of biodiversity will be achieved and the region will move to a high stand in protecting nature and sustainable use of its biological resources. Joining the Cartagena Protocol is an essential step in this direction.

b. ***Actions at the Regional Level***

The Arab countries should consolidate their collective efforts in the protection and conservation of biodiversity, through joint programmes, exchange of information and experience. Attention should be given to Trans-border conservation, such as the borders between Yemen, Oman and Saudi Arabia, Egypt and Sudan, Morocco and Algeria. Eco-tourism programmes could help when properly managed for the conservation of biodiversity in the region. Integrated eco-regional management of biodiversity should be adopted. The use of modern information systems including GIS and remote sensing and networks is an asset. The region also needs to establish regional gene banks to serve the region's needs in protecting/re-introducing lost species.

c. ***Actions at the International Level***

The international community is encouraged to provide the technical and financial resources to enable the Arab countries to implement the conventions related to biodiversity. It is also necessary that UN, in partnership with concerned Arab regional and international institutions, establish a code of ethics for the use and dissemination of genetically modified organisms (GMO). Support for community-driven conservation schemes should also be made readily available to the Arab Region.

6. Air Quality

a. ***Actions at the National Level***

There is a need to improve and establish air pollution monitoring and control programmes for mobile

qualified personnel should be made available. These efforts have to be complemented by programmes for training, capacity building, transfer of cleaner technologies, and research and development related to air pollution and health impacts.

It is necessary to use sound urban planning for cities with support systems that are environmentally sound and have low energy consumption. This can enable short distance hauling and distribution with emphasis on public transportation systems quality and accessibility. Cities should also use modern efficient traffic management systems to reduce traffic idle time, which produces peak emissions. Further, Air quality regulations and enforcement mechanisms should be put in place. Removing subsidies and refining energy efficiency could also contribute to curbing CO_2 emissions, improving fuel consumption, increasing government revenue and advancing public transport services.

It is also necessary to continue efforts to eliminate leaded gasoline, replace aging vehicles, use cleaner technologies, increase availability of cleaner fuel including natural gas stations and intensify afforestation efforts. All of which will contribute towards improving the air quality in Arab cities.

b. Actions at the Regional Level

Joint programmes are needed to address common priorities of the countries of the region in the domain of air pollution monitoring and control, assessment of health impacts associated with air pollution, and the exchange and dissemination of air pollution information and experience. It is also important to set up regionally compatible air quality standards or guidelines.

Arab countries should provide incentives for the transportation and industrial sectors to tackle air quality problems not only at the national level but also by developing sub-regional/regional transportation networks and energy efficient systems and grids.

c. Action at the International Level

The international community is urged to provide technical and financial assistance to address the issue of air pollution. Technology transfer, capacity building, guidelines and standards exchange and information dissemination are among the priority issues to be addressed.

7. Climate Change

Countries of the Arab Region are concerned over the potential impacts of global warming on water resources, fragile ecosystems, and the livelihoods of millions of people living in low-lying coastal areas.

a. Actions at the National Level

National monitoring strategies should be established to monitor the amount of CO_2 produced. Reduction of CO_2 emissions through elimination of flares, use of more efficient fuels and promotion of efficiency and Cleaner Production schemes in industry should be promoted. Afforestation and sink development should be encouraged.

The Arab countries should coordinate their policies and positions, including with respect to the socio-economic impacts of GHG mitigation on developing countries, and oil-producing countries. The implementation of Cleaner Development Mechanisms and Cleaner Production strategies in the energy sector is a direction that countries may pursue to reduce their impacts on climate change.

b. Actions at the Regional Level

The most pressing need over much of the region is for sound assessment and monitoring programmes. The Arab countries should also coordinate their policies and positions including their responses to the social and economic impacts of greenhouse gas mitigation, within developing and oil producing countries.

There are some obvious research needs. Clearly, many basic physiological and ecological studies of the effects of changes in atmospheric and climatic conditions are necessary. The most pressing need over much of the region is for sound assessment and monitoring programmes to establish current baselines and identify rates of change. Some of the needed research and information regarding climate change in the Arab Region are:

1- The development of predictive climate change climate models on regional scales, including the Arab Region.
2- The impacts of climate change on the Arab Region in terms of economic, social and environmental aspects, especially in the area of food and water security.
3- The role of climatic feedback resulting from ecological systems and atmospheric variables, such as clouds, water vapor, carbon soot…etc.
4- The quality and coverage of the Climate Observation Networks in the Arab Region.
5- Assessment of the economic costs of confronting climate change impacts, and adopting mitigation measures.
6- The magnitude of impact/vulnerability in the Arab Region due to extreme climate/ weather events, such as heat waves, dust storms and thunderstorms.
7- The impacts of climate change on weather forecasting in the Arab Region.
8- The minimization of scientific uncertainties, including all hypotheses pertinent to climate change in the region.

c. Actions at the International Level

The international community must address the impacts of mitigation measures on developing countries.

8. Ozone Depleting Substances (ODS)

a. Actions at the National Level

The Arab countries should continue to phase out the use of ODS and continue implementation of the Montreal Protocol (MP).

b. Actions at the Regional and International Level

1- Assist non-parties in the Arab Region to ratify the MP and/or its amendments.
2- Provide the necessary assistance to Arab countries to achieve and sustain compliance.
3- Assist Arab countries that have not initiated their Country Programmes to do so.
4- Maximize the possibility of early phase-out of ODSs in the Arab Region.
5- Assist stakeholders to select proper ODS alternatives taking into consideration that such alternatives are not effecting the Ozone Layer (in the long term), and are not restricted under the other MEAs e.g. Kyoto Protocol.

G. GOVERNANCE AND PUBLIC PARTICIPATION FOR SUSTAINABLE DEVELOPMENT[294]

Improving governance for sustainable development requires a rethinking of the relationship between institutions, individuals and policy instruments. It also requires an assessment of the Arab Region's ability to reconcile and integrate social, economic and environmental agendas.[295] While much progress has been achieved over the past decade in strengthening environmental management, it is now important to refocus the regional outlook to seek out sustainable development. Such an endeavor should reflect upon practical lessons learned from shared past experiences and clearly set out integrated priorities and cost-effective solutions[296] that are culturally sensitive and applicable to the regional context.

Governance, being a web of international conventions, other legal instruments, agreements and procedures that control global interactions, has also been drastically influenced by the globalization process and other global forces, such as trade liberalization and the information technology revolution.[297]

a. Actions at the National Level

The need for good governance is strongly emphasized to include strengthening the legal framework, nurturing democracy, accountability and transparency, effective participation of the civil society, especially women and youth, NGOs and the private sector in the decision making process.[298] "National multi-stakeholder consultations should not be a token process of getting "precooked" government plans and programmes rubber-stamped by the public. Rather they should become fora for authentic and real participation and dialogue."[299]

(1) Institutional development and capacity-building

- Government institutions at the national and local level need to be equipped with the capacity to conduct sound policy analysis and effective policy implementation.
- Adopting decentralization, and establishing linkages and coordination mechanisms between environment ministries, other concerned ministries and relevant sectors are of paramount importance in improving governance for sustainable development.

(2) Integrated planning and programme implementation

- National sustainable development strategies and action plans should be better integrated into sector-based work programmes.
- Partnerships between relevant stakeholders from the public and private sectors should be encouraged to participate in decision making during the planning and implementation processes.
- Promote public participation by raising awareness through disclosure and dissemination of information.

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[294] Ibid.
[295] Thematic RT Report.
[296] Ibid.
[297] Stakeholders Roundtable.
[298] Ibid.
[299] Thematic RT Report.

(3) National and local linkages

- Local and national priorities for sustainable development should be considered and streamlined.
- Sustainable development strategies and action plans should take into consideration national and local priorities.
- Local capacity for policy formulation and implementation should be improved, as should local accountability and financial autonomy.

(4) Oversight and accountability

- Institutions and individuals should be held accountable and transparent for their performance and ability to achieve stated goals and predetermined work programmes.
- Establish National Councils for Sustainable Development for strategy and policy coordination, and create mechanisms for oversight to monitor and assess progress in moving towards sustainable development targets based on publicly determined indicators.

b. Actions at the Regional Level

The role of the League of Arab States (LAS) should be enhanced in terms of the cooperation and coordination between Arab governments. An Arab Council for Sustainable Development to meet at the level of Prime Ministers should be considered. Regional governance should be participatory, and a Code of Conduct should be developed for governance and the participatory approach in the region. Regional cooperation and coordination regarding the implementation of MEAs needs to be strengthened and enhanced. Through LAS, the region must also develop the legal, administrative and financial mechanisms that would foster good governance in Arab countries.

c. Actions at the International Level

It is of paramount importance to strengthen (institutionally and financially) and empower the UN to play a more proactive role in sustainable development, emphasizing the importance of the concentration of each agency on its respective area of specialization.

Reform and restructure of the international institutions may be required in order to achieve better governance. Enforcement of international legal instruments, and the identification and settlement of liabilities must also be addressed.

H. PATTERNS OF CONSUMPTION[300]

Unsustainable consumption patterns that are practiced in the developed countries pose a significant impediment to sustainable development, exacerbating poverty and debt burden in developing countries.

a. Actions at the National Level

Governments and the private sector are urged to change the unsustainable pattern of production and consumption of goods, services, and natural resources. In this regard, it is necessary to direct the role of media, educational institutions, and civil society groups to change the materialistic consumption patterns. Consumer protection societies and women are crucial elements in the change process.

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[300] Stakeholders Roundtable.

In addressing the pattern of consumption issues, it is necessary to take into account the rights of the consumers, to encourage the use of traditional products and goods, to promote the concept of cleaner production and consumption, and to encourage reuse and recycling activities, including research and development.

b. Actions at the Regional Level

Collective efforts of the countries are needed to revive Arab and Islamic traditions and teaching as a distinct feature of the region, which can reflect positively on sustainable development. There is also a need to harmonize production and environmental standards among Arab countries. Regional consumer protection societies should be established to play a proactive role in changing customer consumption patterns.

c. Actions at the International Level

The developed world is urged to change unsustainable production and consumption patterns that deplete global natural resources and have a high ecological footprint. It is also urged to devote more resources to develop eco-efficient technologies and make them affordable to developing countries.

I. PRESERVING CULTURAL HERITAGE[301]

It has become evident that the culture heritage of the Arab Region has been under-utilized, especially as a tool for development. With its unmatched heritage, the Arab Region has a great opportunity that should be given priority and be used in an economic as well as cultural sense.

a. Actions at the National Level

Family values must be respected and protected against foreign norms. Media and civil society should be empowered to play a leading role in this area. The role of cultural heritage and Islamic values should be emphasized in pursuing sustainable development tracks. Arab countries should intensify efforts to revive, preserve, maintain, and prudently manage natural and cultural heritage. Indigenous knowledge and cultural heritage should be used as a tool for economic growth, e.g. eco-tourism. Cultural dimensions must be incorporated into the formulation of all development policies and project interventions.

The scarcity of financial resources to invest in preserving and developing this sector can be alleviated through policy and institutional reform for increasing the sector's self-financing, and by drawing the interest of the international community to invest in the Arab Region's culture heritage as a world heritage.

b. Actions at the Regional Level

There is a need to review periodically the Arab strategy regarding cultural heritage, and to encourage Arab Regional programmes to preserve and use cultural and natural heritage for economic growth.

The culture of the Arab Region should be protected from invasion of foreign norms by reviving the Arab and Islamic cultural values. It is also essential to create awareness of the Arab culture and heritage at the global level; at the same time the Arab Region should be receptive and tolerant to other cultures.

c. *Actions at the International Level*

The international community is urged to provide technical assistance and financial resources to assist in the maintenance, preservation, and development of culture and natural heritage of the Arab Region. As treasures of universal relevance, their benefits are transnational. The global community is urged to establish dialogues between different global cultures to create global tolerance to different cultures and religions.

J. TRADE AND GLOBALIZATION[302]

Globalization is an irreversible process that transcends geographical, financial and cultural barriers. Developing countries, indigenous peoples and cultures and SMEs face the potential risks associated with globalization. In this connection, the international trade structure has witnessed major changes since the inception of the WTO.

a. *Actions at the National Level*

Trade liberalization should be pursued in the Arab countries according to a time plan associated with building the necessary infrastructure and the reform of institutions and policies necessary to achieve trade liberalization while minimizing possible negative impacts.

To improve competitiveness and increase market access, Arab countries need to improve efficiency, product standards, and to align production technologies with international standards, including environmental standards (e.g. ISO 14000, eco-labeling). They must also diversify products and services, and export manufactured goods rather than raw materials. Further, national economies should be integrated into regional and global economies to take advantage of international trade systems.

The Arab countries need to create the right environment for full inclusion in globalization including essential infrastructure, services, and institutional setup, in order to streamline and integrate into the processes of regionalization and globalization. The Arab countries are urged to take measures to avoid the negative impacts of globalization, and to address the cost associated with globalization on technical, economical, environmental, and social levels. Further, they should, in cooperation with civil society and other stakeholders, properly assess the impacts of international treaties on the Arab Region before signing in. To counter the undesirable values and consumption patterns that may infiltrate to the Arab Region through globalization, it is important to promote local and Islamic cultural values.

b. *Actions at the Regional Level*

Arab countries should support the establishment of Pan Arab Free-Trade Area as a first step in developing Arab economic integration towards an Arab Economic Block with a strong negotiating capacity.

In order to achieve regional economic integration, the following regional collective efforts are required:[303]

1- Development of regional trading systems, and strengthened inter-country trade.
2- Development of regional financing systems, specially banking, monetary systems and procedures.
3- Addressing the issues of tariffs, customs barriers and taxes.
4- Harmonizing the legal system in the region.
5- Building the regional infrastructure, including integrated transportation systems and regional communication and information networks, etc.
6- Diversifying economic activities within and between countries based on their comparative advantages.

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[302] Ibid.
[303] Ibid.

It is further suggested to take measures towards integration into the global economy and to avoid the negative impacts of globalization. The need for collective actions by the Arab countries and their effective participation in developing international agreements is also stressed.

The region should take an active role in the WTO negotiations, including the issue of Intellectual Property Rights, and negotiate and sign regional partnerships agreements with other strategic regions, especially Europe, Africa, and Asia. Eco-labeling should be also pursued at the regional level to encourage exports. The region should consolidate a common position toward globalization issues and the operations of multi-nationals in the region. The industrial capacity at the regional level should be expanded.

There is a need to comprehensively study the globalization process, in order to be able to develop a well-informed stand towards globalization issues. Arabic and Islamic culture and values in the region should be emphasized to counteract the spread of consumer culture, with civil society and the media engaged to assist in the achievement of this goal.

Harmonization between governments and parliamentarians on the regional level will strengthen the regional approach to globalization. South-south cooperation in meeting the demands of globalization is to be encouraged.

c. Actions at the International Level

WTO and other relevant agencies and organizations of the UN system should provide technical assistance to the Arab countries of the region to meet the challenges created by world trade liberalization and to mitigate any adverse impacts of WTO decisions on Arab countries. The international community is also requested to reconsider the economic sanctions/embargos on concerned Arab countries.

Developed countries are also requested to ensure fair, equitable basis for the free movements of goods, people and products.

For fair participation in globalization for all countries, the free flow of human resources and technologies along with capitals, services and products must be allowed. Globalization should be governed through the UN system. There should be a code of conduct for multi-national corporations, and regulations should be put in place to streamline direct foreign investment with local and regional needs and priorities.

K. FINANCIAL AND INSTITUTIONAL MEANS OF IMPLEMENTATION

1. Financing Sustainable Development[304]

Achieving sustainable development requires not only legal and institutional changes but also financial arrangements to cover the initial cost of moving to new patterns and mechanisms of development.

a. Actions at the National Level

The Arab countries are encouraged to take measures, which assist them in financing sustainable development, taking into account that mechanisms to mobilize funding may differ from one country to another. The following are some of the options that countries can undertake:

1- Encourage the involvement of the private sector to invest in sound sustainable development projects.

2- Intensify efforts and develop programmes aimed at mobilizing internal financial resources, such as:
   a. Mobilizing domestic savings and investment
   b. Enforcing the polluter pays principle
   c. Adopting environmental fees and license schemes.
3- Self-financing mechanisms can be applied to some sectors, such as the cultural heritage sector.
4- Adopt policies, which increase exports, while rationalizing imports.
5- Encourage, with the help of civil society, citizens to choose national and Arab products and services.
6- Countries and the private sector should undertake feasibility studies prior taking out loans and ensure rational borrowing and efficiency in the management of debts.
7- It is important to ensure that money from loans is used for sustainable development programmes and projects, transparently and with full accountability.
8- The economic performance of governments should be improved through efficient sustainable management of resources.

b. Actions at the Regional Level

At the regional level, a number of key measures and mechanisms need to be considered:

1- Encourage the private sector to invest in large scale regional projects, including the development of regional infrastructures such as transportation; energy networks and pipelines; water desalination, recycling, distribution, etc.
2- The success of micro-finance projects and micro-credit in selected countries in the region is a worthwhile development experience that needs to be studied for large-scale replication in the region.
3- Study the feasibility of establishing a mechanism to address the region's environmental priorities.
4- Encourage partnerships between governments and beneficiary parties to generate funds for sustainable development.
5- Create favorable conditions and encourage investors including expatriates and foreign investors to invest in the region.
6- Seek and consolidate peaceful settlements of disputes in the region to reduce military expenditures, thus making more funds available for sustainable development.
7- Regional development banks and Arab funds are urged to integrate environment with social and economic aspects in their operational programmes.
8- The region needs to develop experience and improve management to deal with debt issues. Joint programming and investment projects should be investigated to optimize the use of loans.
9- The region needs to investigate debt for trade swaps within the region.
10- At the level of the League of Arab States, mechanisms of financing sustainable development should be investigated through the coordination between the economic and social councils, in collaboration with CAMRE, concerned Arab, regional and international institutions and organizations.

c. Actions at International Level

At the international level, an atmosphere conducive to investment in developing Arab needs to be created:

1- Encourage and urge private multi-national investors to invest in the Arab Region.
2- Developed countries are urged to reconsider their debt policies toward the Arab Region to be more favorable in promoting sustainable development, including debt swab, rescheduling, waiving, etc.

3- Developed countries should take their responsibilities for the environmental damage they inflected on the global resources, and honor the commitments they made at UNCED.
4- Multi-lateral and bilateral donors are urged to simplify and avail their procedures and criteria to the Arab countries, and to be more accessible to support sustainable development in the Arab Region.
5- Assist the Arab Region to integrate into the global economy and to mitigate the adverse impacts of WTO.
6- International donors, development banks and funds are urged to integrate environment with social and economic aspects in their operational programmes.
7- International creditors are urged to ease or write off debt through the demonstration of the countries of the region of greater transparency, better governance and more appropriate institutional set up.

2. Institutional Set-up for Sustainable Development[305]

The institutional set up in support of the financial mechanisms should be integrated and streamlined at the national, regional, and international levels.

One of the major initiatives in regional cooperation was the establishment of the Council of Arab Ministers Responsible for the Environment (CAMRE) in 1987. The aim of this mechanism is to promote Arab cooperation in all matters related to the environment, identify the main environmental problems within the Arab Region, set priorities for action, in addition to focusing on overlapping relations between the environment and development.

CAMRE also accords considerable concern to coordination of Arab positions in international meetings focusing on environmental issues. CAMRE has set up the Joint Committee on Environment and Development in the Arab Region (JCEDAR) to enhance coordination and cooperation between national environmental agencies and the Arab regional organizations, and other international organizations concerned with the preservation of the environment and the achievement of sustainable development in the Arab Region.

CAMRE has entrusted JCEDAR with the task of developing the Abu Dhabi Declaration on Perspectives of Arab Environmental Action into concrete programmes and activities.

A number of specialized Arab agencies affiliated to the League of Arab States are concerned with the environment as an integral part of their activities. For example, the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD), the Arab Organization for Agricultural Development (AOAD), the Arab Industrial Development and Mining Organization (AIDMO), the Arab Labor Organization (ALO), the Arab Agency for Atomic Energy (AAAE), the Arab League Education, Culture, and Science Organization (ALECSO). The latter was the first Arab organization to focus on environmental issues, established in the early seventies.

There are also other regional and sub-regional institutions concerned with regional environmental action, such as the Center for Environment and Development in the Arab Region and Europe (CEDARE), the International Center for Agricultural Research in Dry Areas (ICARDA), the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA), the Regional Organization for the Protection of Marine Environment (ROPME), and the Mediterranean Action Plan (MAP). There are also United Nations agencies that deal with environmental issues especially ESCWA and the two UNEP regional offices in Africa and West Asia.

[305] Ibid.

a. Actions at the National Level

The Arab countries are encouraged to develop partnership between governments, civil society, and private sector; develop national strategies, and doable action plans with specific targets, financial and human commitments; establish national sustainable development councils; and strengthen national networks for sustainable development.

b. Actions at the Regional Level

Efforts should seek to establish an Arab Sustainable Development Council, with the participation of the private sector, civil society and academia, to provide an umbrella setting for policy frameworks, regional cooperation, coordination, and integration in the global frameworks. The council composition should reflect, in a balanced way, the three dimensions of sustainable development (social, economic and environmental). A financing mechanism for the council should be secured with its inception in order to avoid setbacks.

c. Actions at the International Level

The global community should seek (1) to re-examine the UN previous experience in the area of development. In light of the lessons learnt from this assessment, the UN organizations should assume a more effective role in the area of sustainable development and global governance, including the strengthening of the UNEP role, especially in area of coordinating MEAs; (2) to ensure that environmental dimension is integrated into the UN Economic and Social Council (ECOSOC) (3) to strengthen the role of the UN system in the efforts towards governing globalization so that the benefits of globalization reach all countries on a fair basis; and (4) to see that the UN system takes a more integrated approach to provide collective efforts in serving the countries without redundancy.